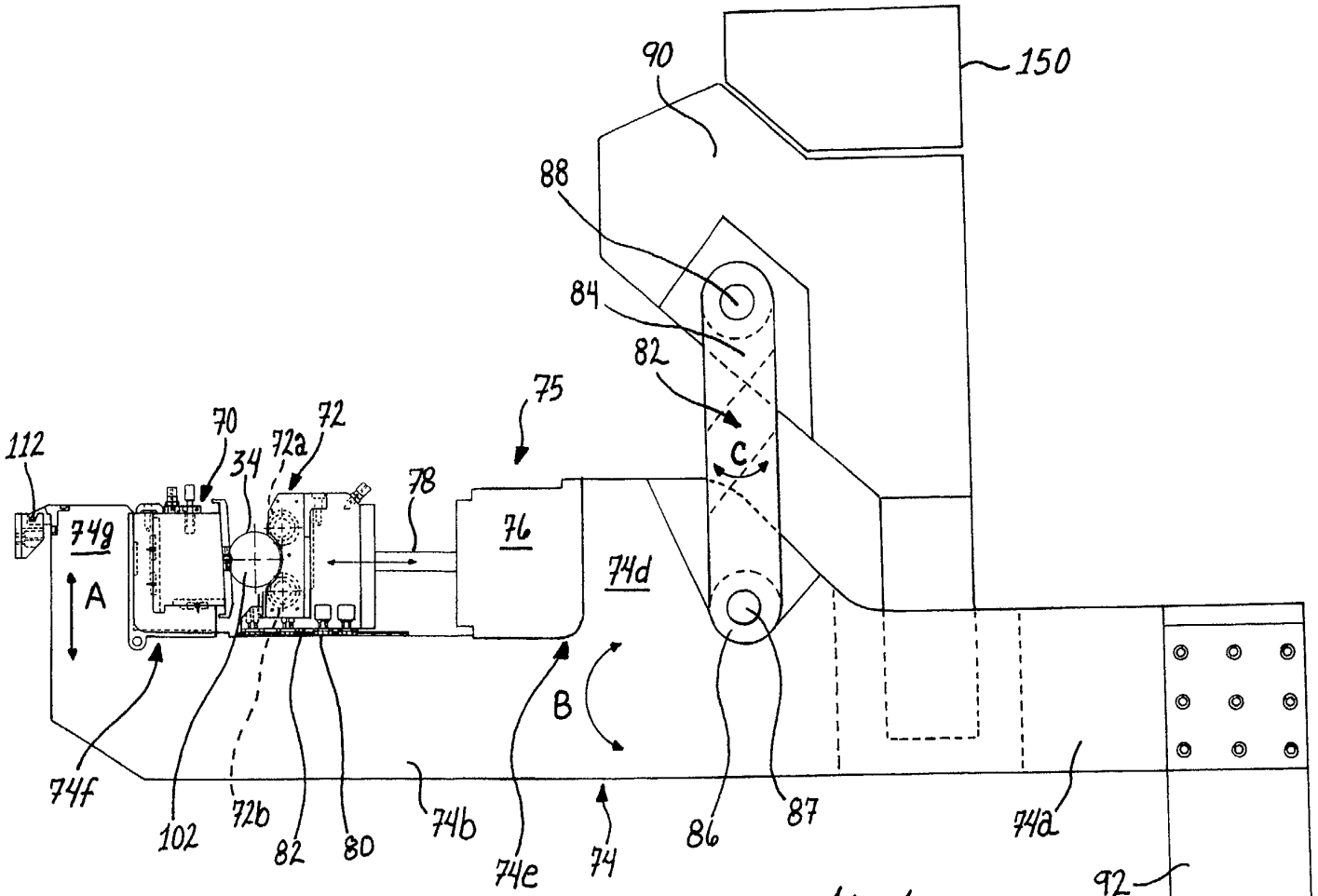
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150
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84
82
75
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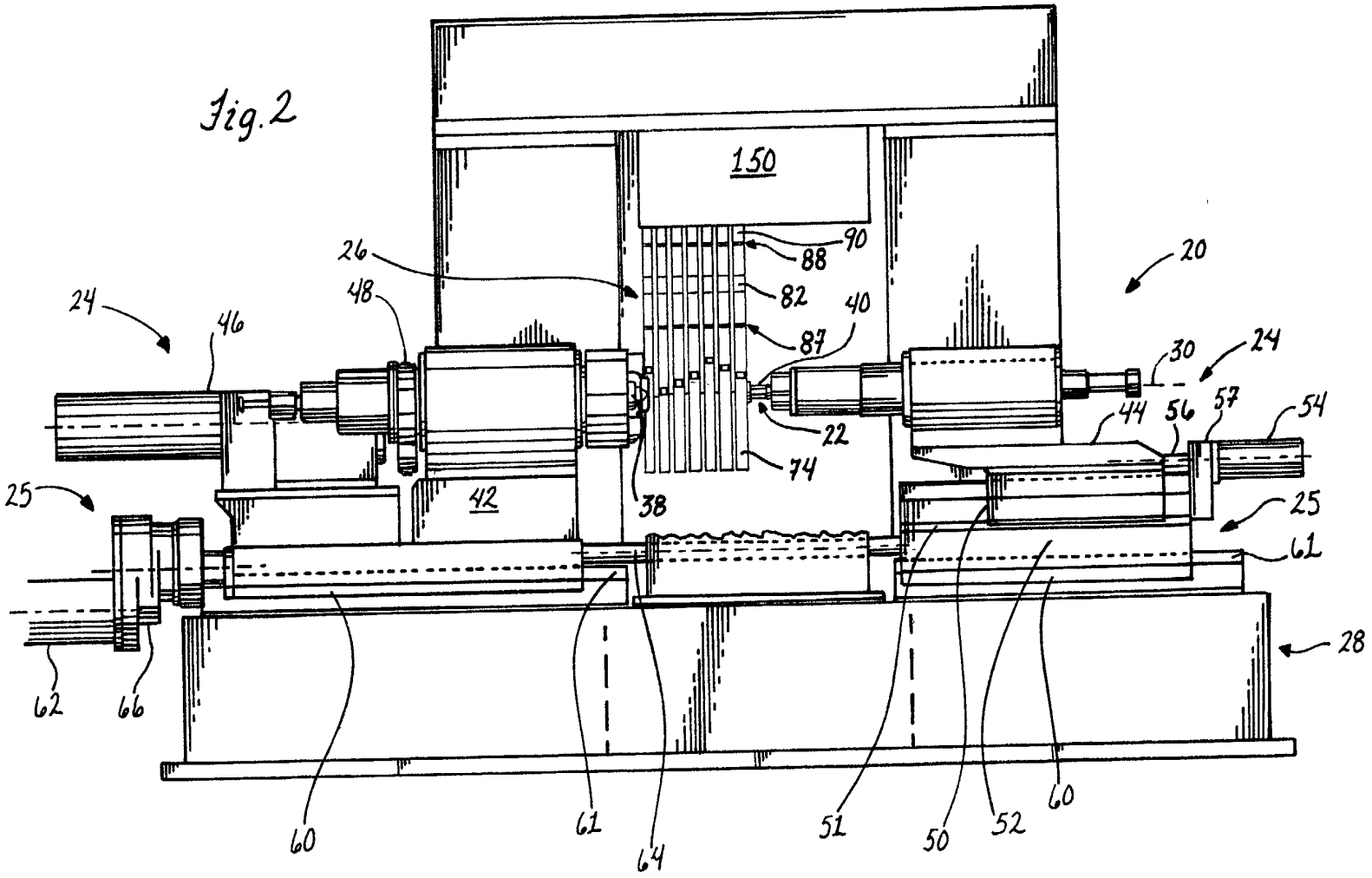
72
72a
112
34
78
C
74g
76
74d
A
B
74f
102
72b
82
80
74b
74e
74
86
87
74a
92

Fig.1

Fig. 2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60

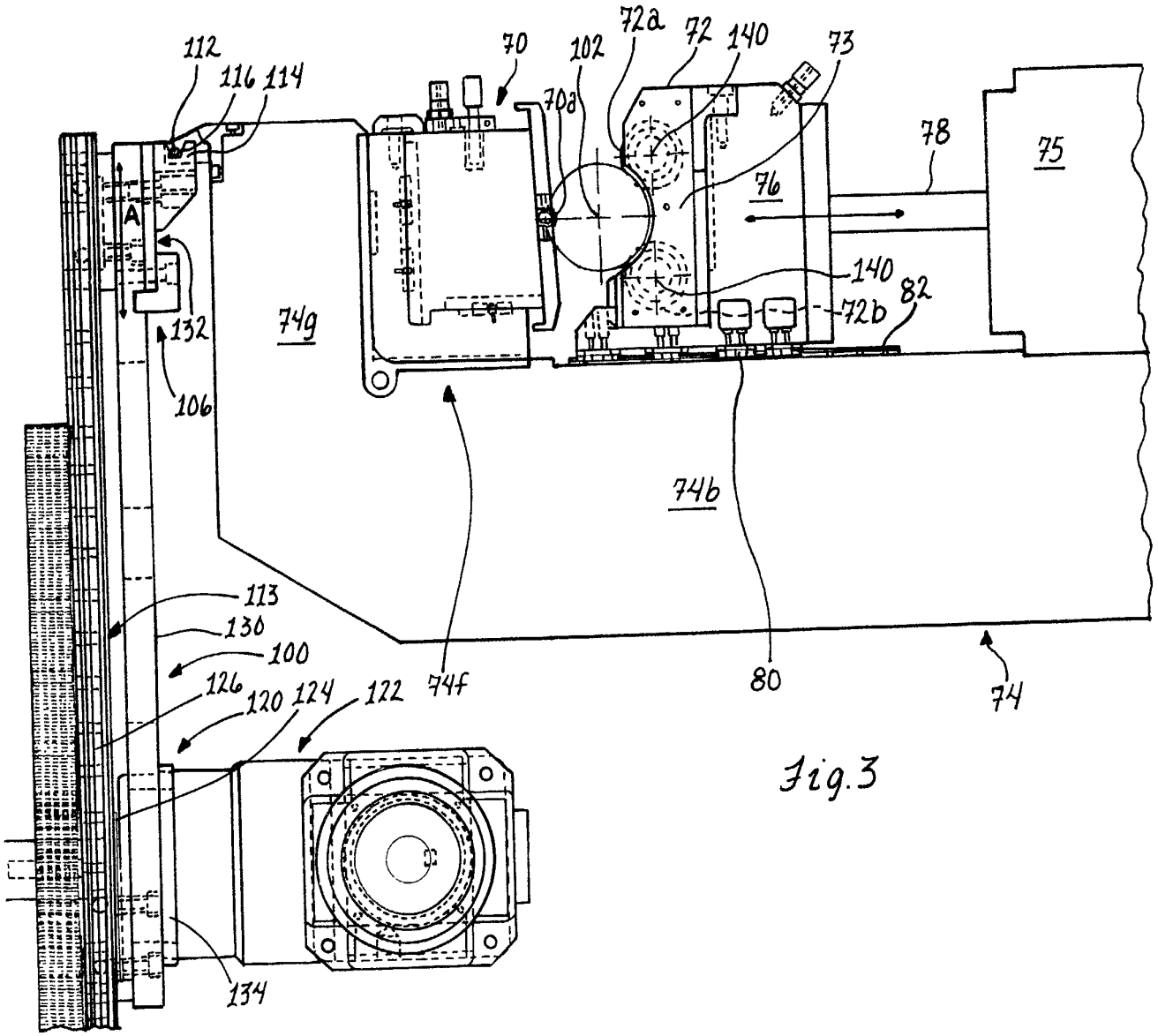


Fig.3

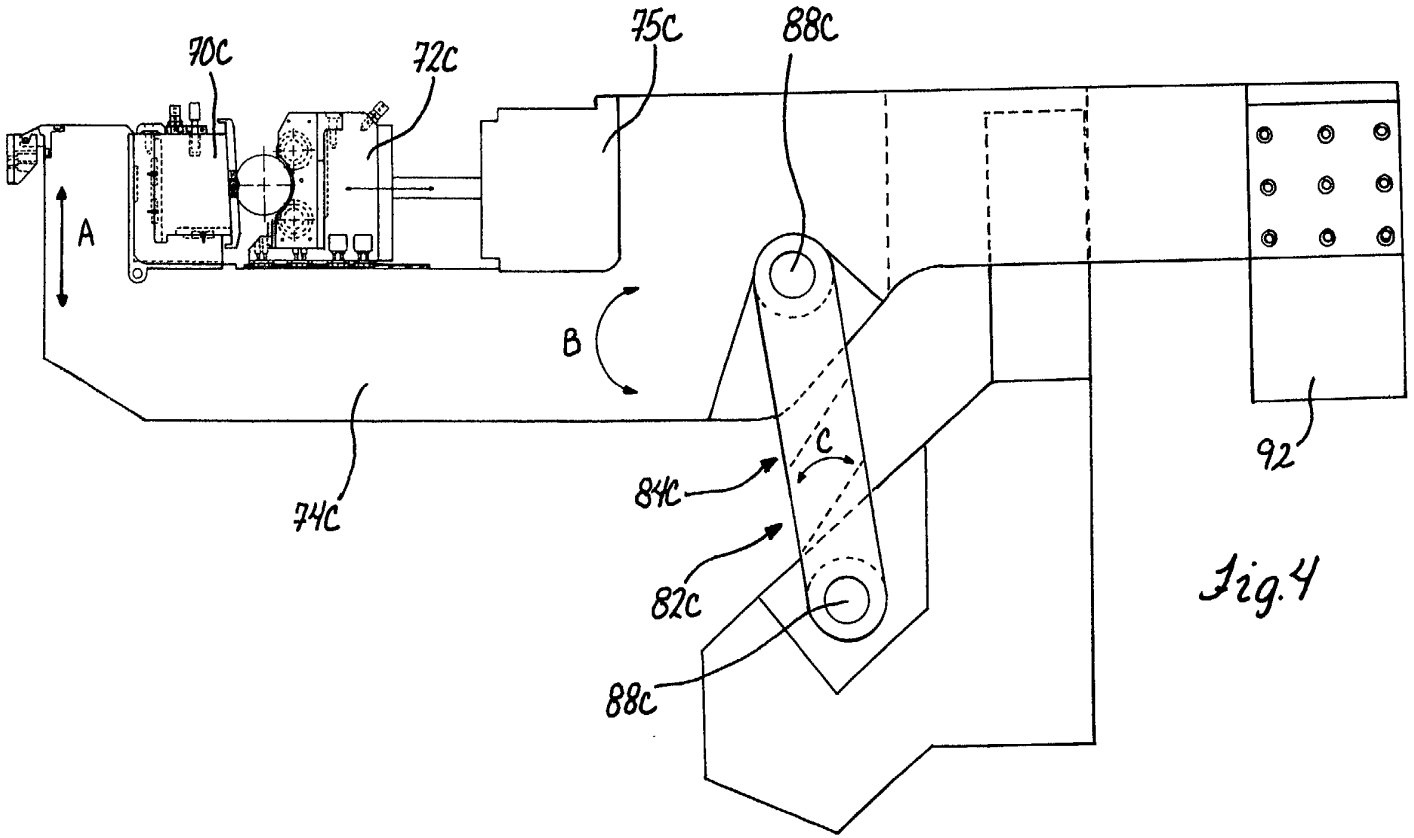


Fig.4

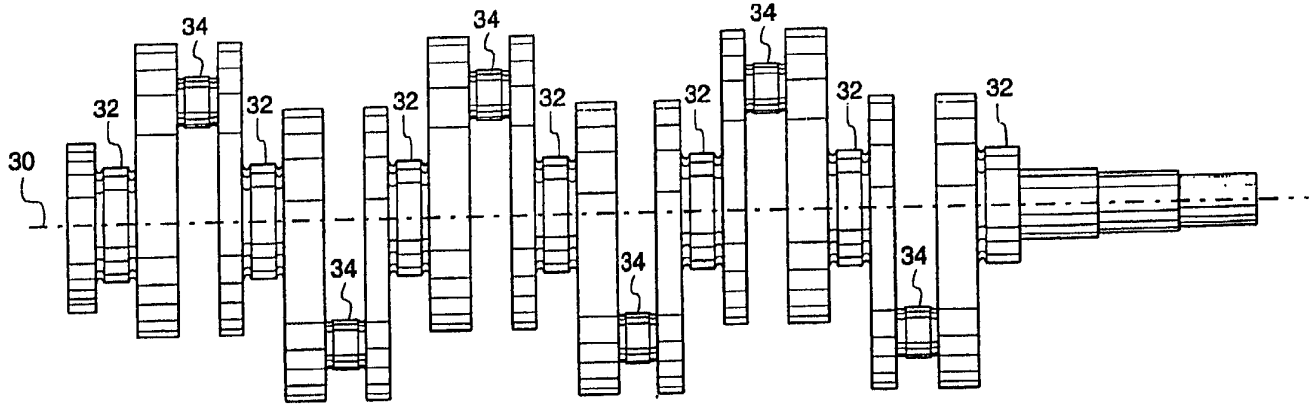
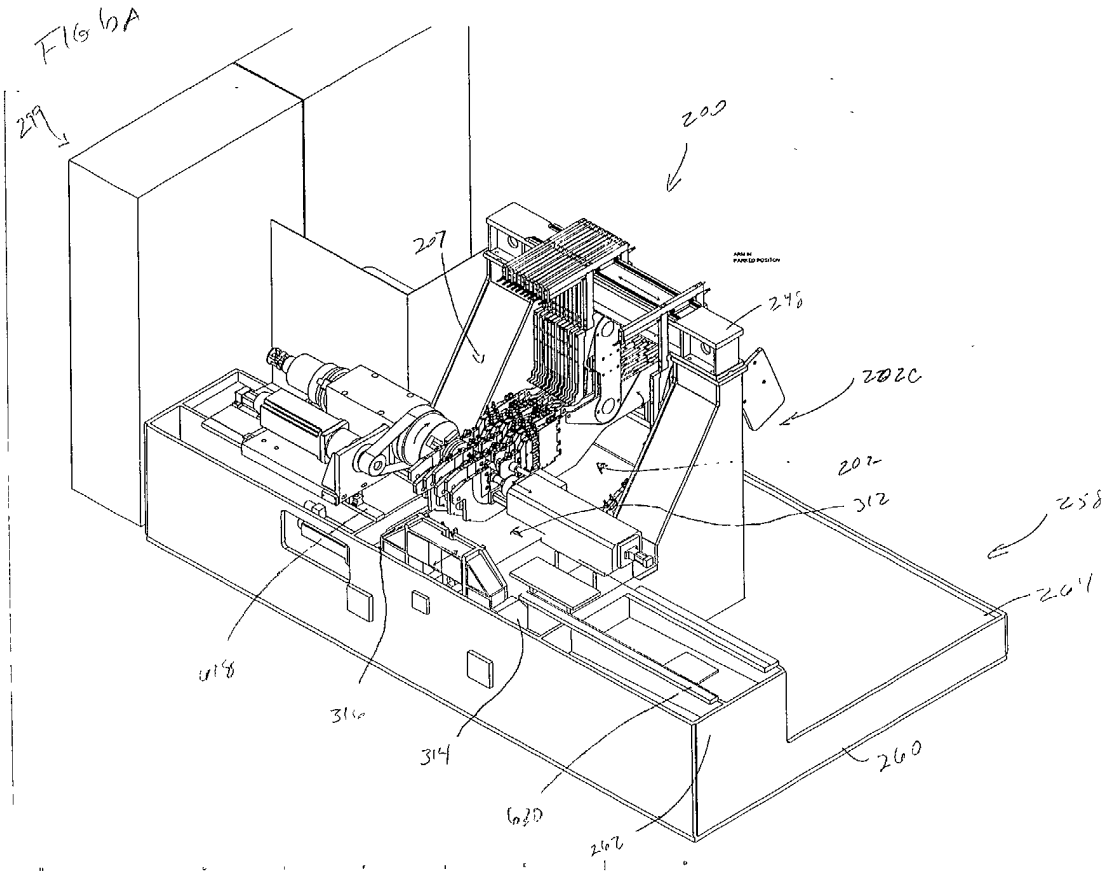
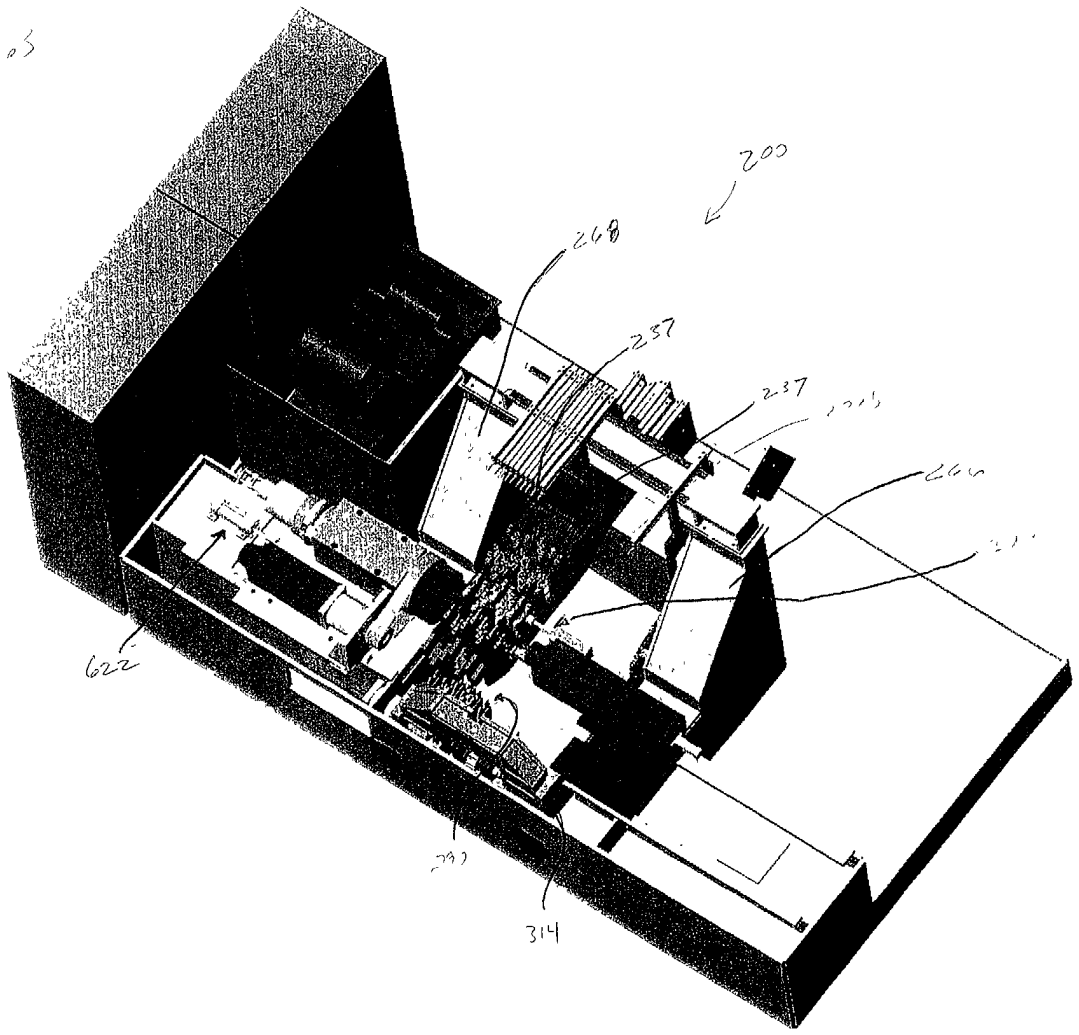


Fig. 5A

FIG 6A

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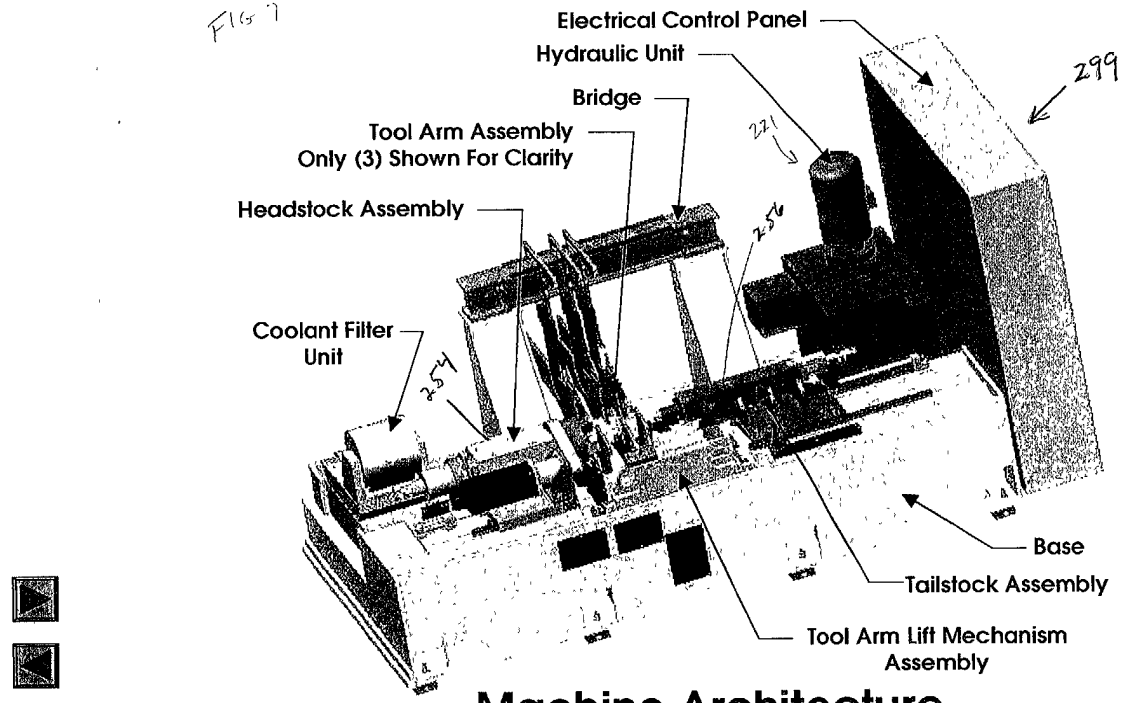
237
237
622
314



Machine Architecture

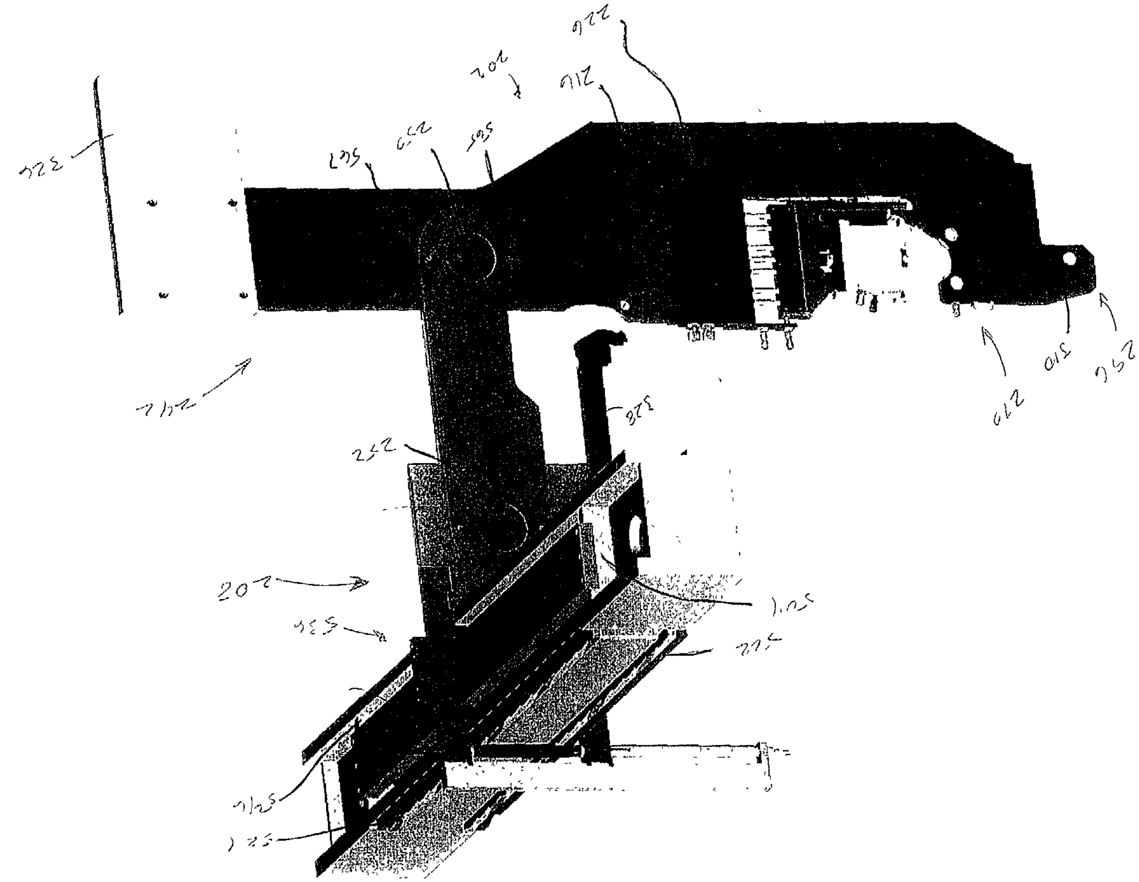


FIG 8

R & D ACTIVITIES

- Initial Design to Meet Goals Using:
  - ALL DESIGN AND DETAIL IN 3D (SOLIDWORKS) FOR INTERFERENCE, FEA MODELS AND SIMULATIONS

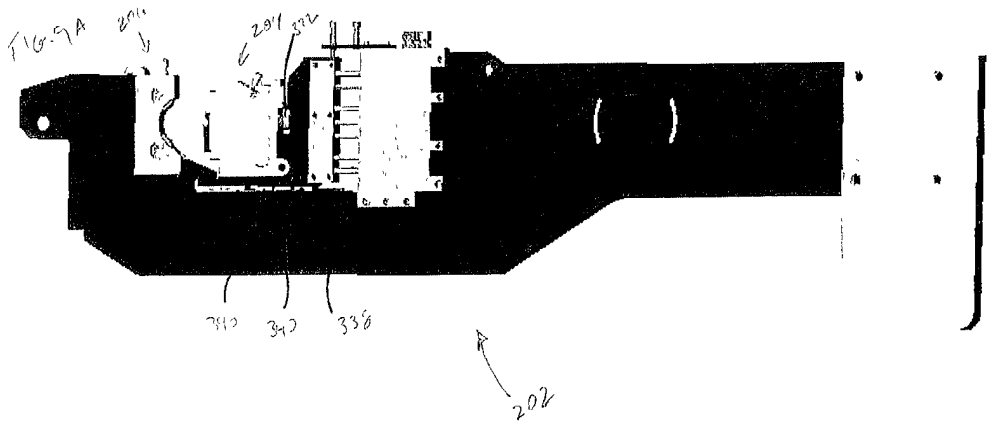


FIG 9B

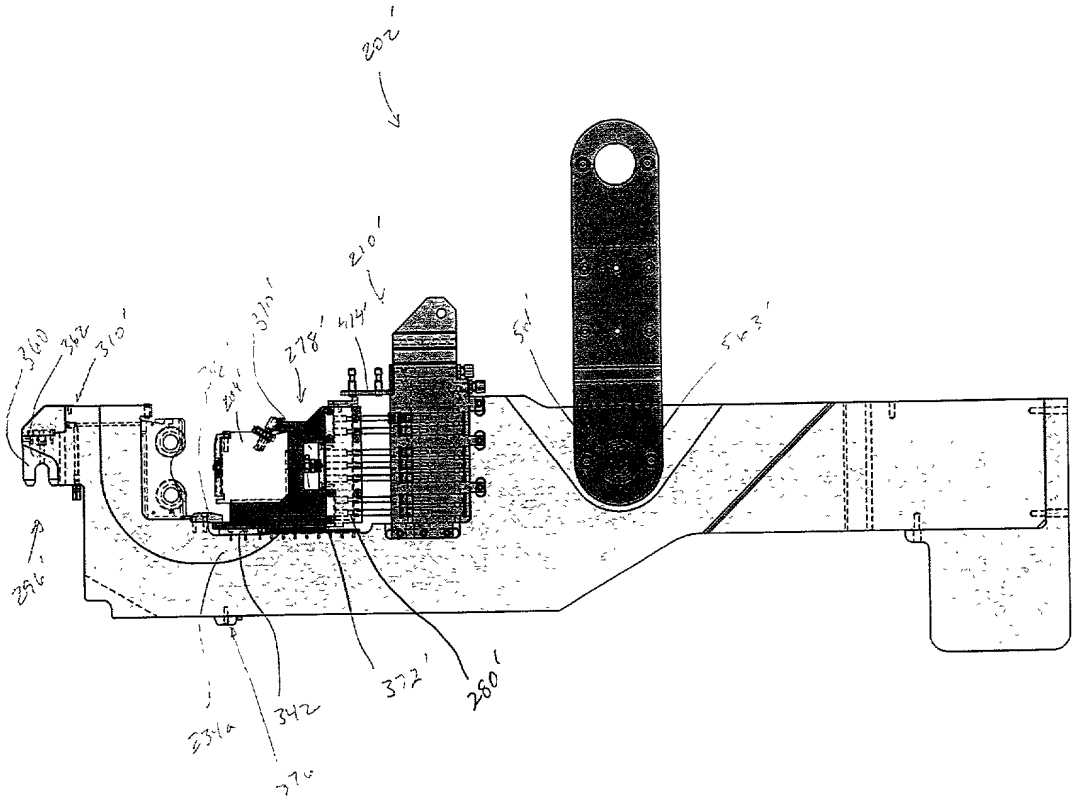


FIG. 3A

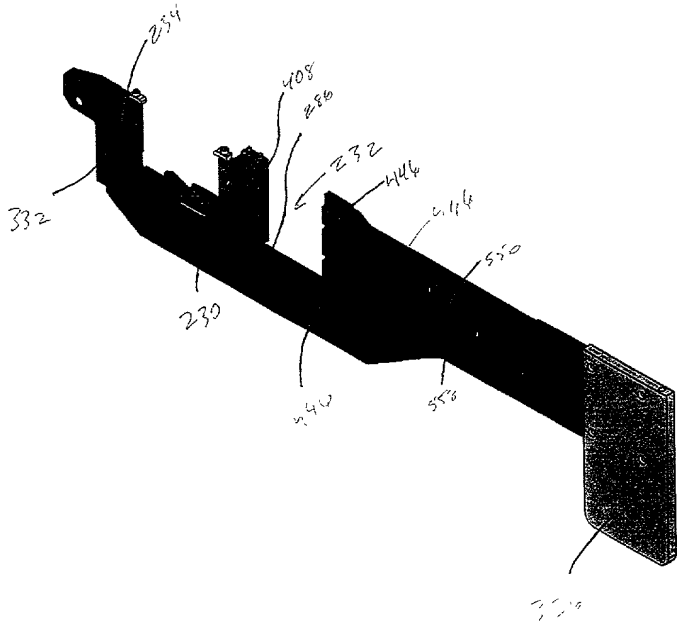


FIG 1C B

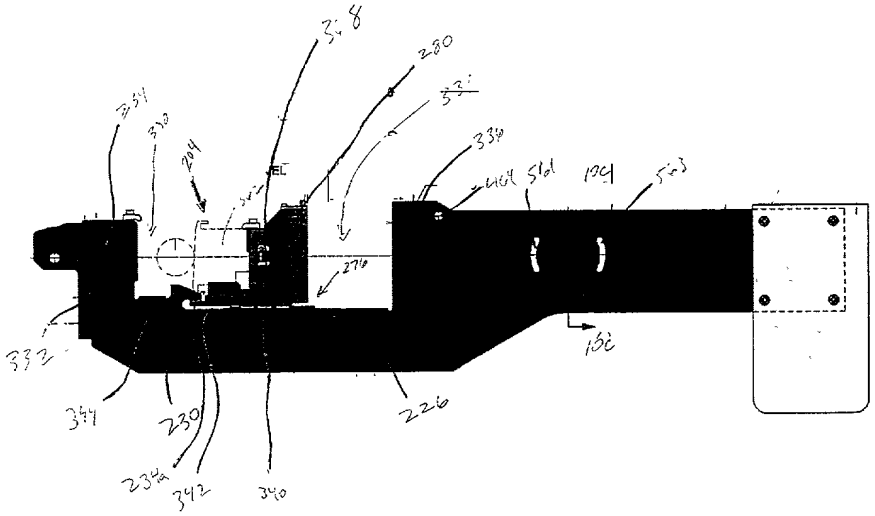
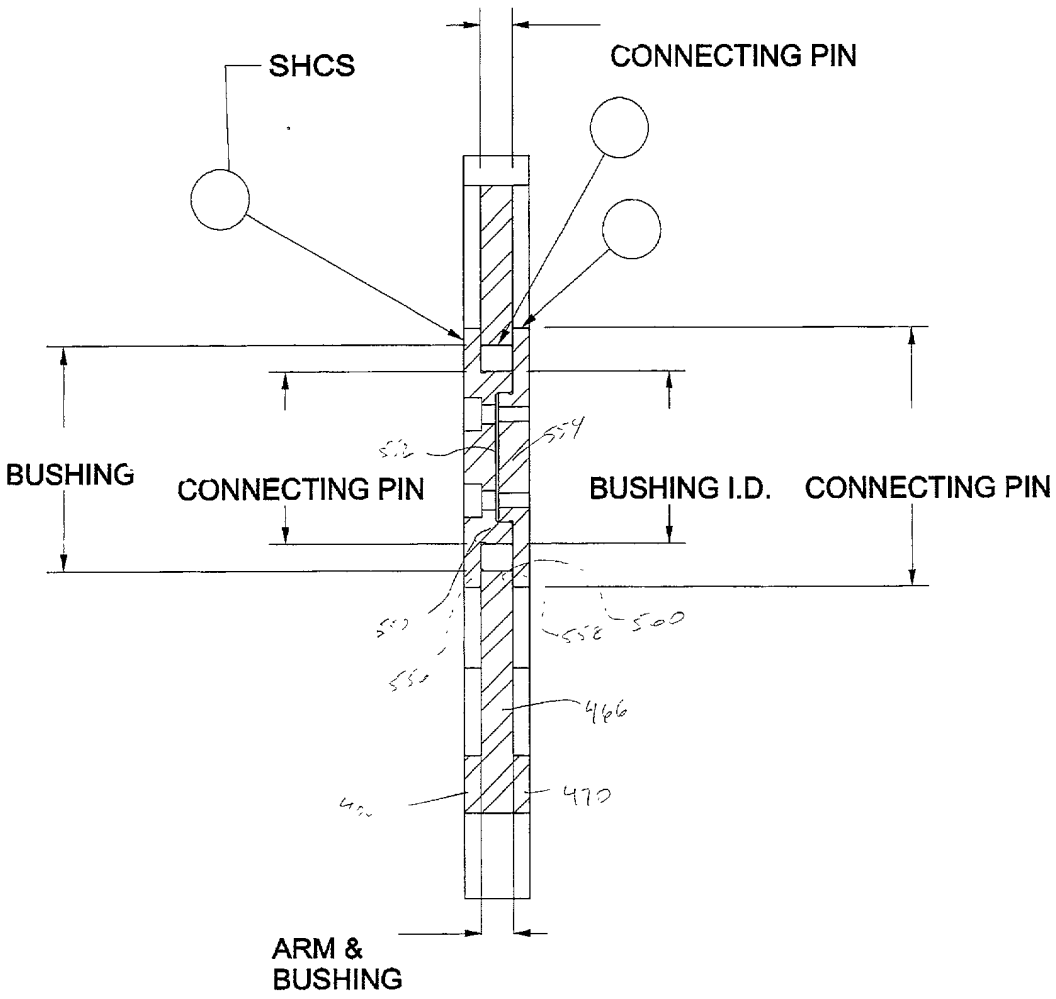


Fig 10D



SECTION B-B
SCALE

FIG. 10D

Fig 10E

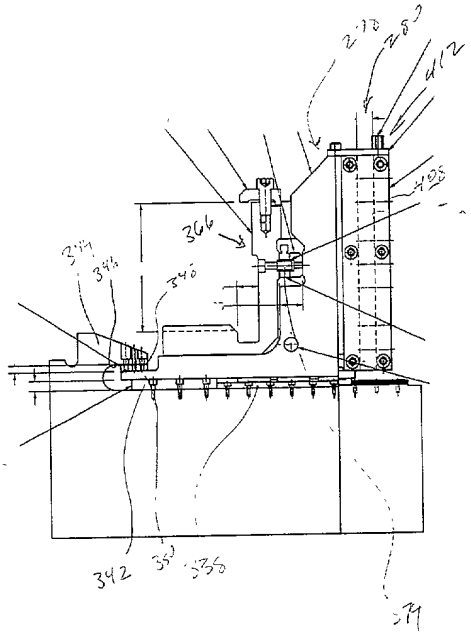


FIG 11

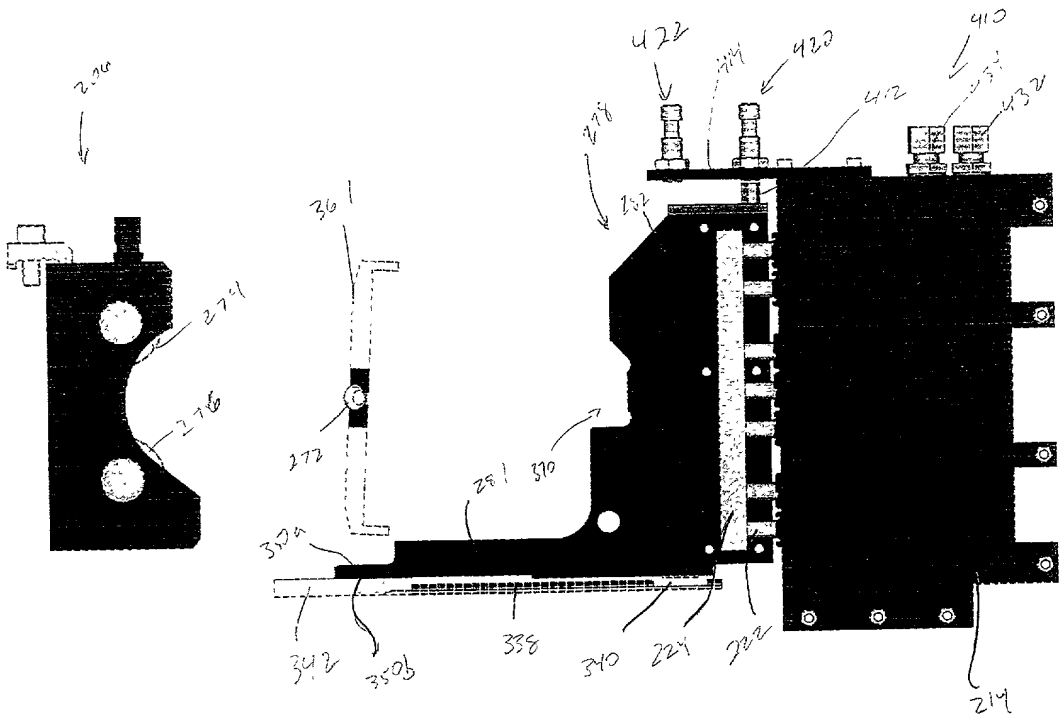

422
424
420
410
412
432
278
282
361
274
276
272
281
330
370
342
350b
338
340
224
222
214

FIG. 12B

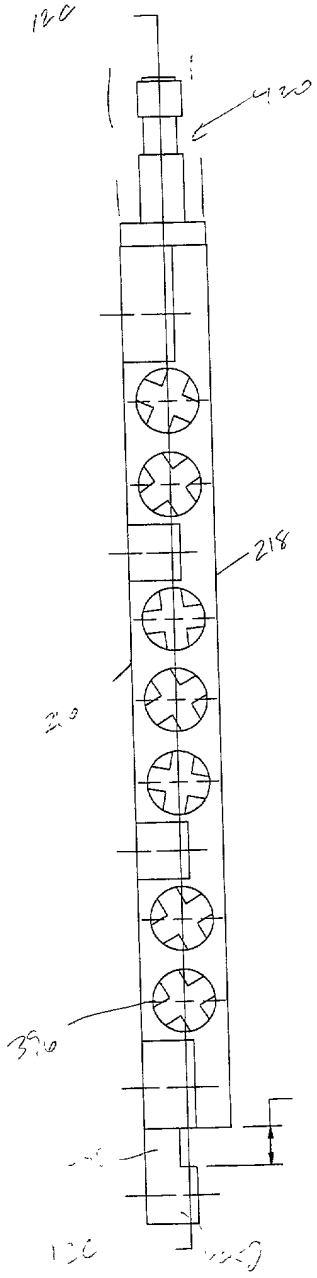


Fig. 22

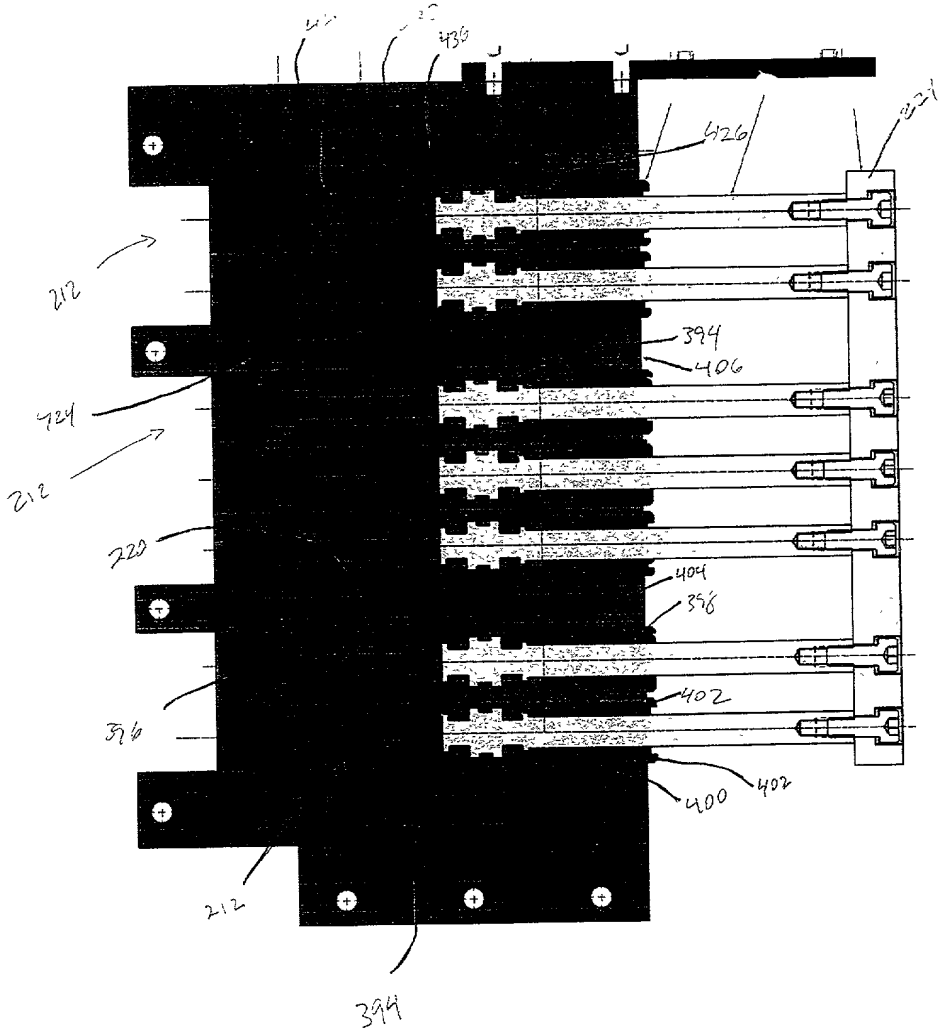
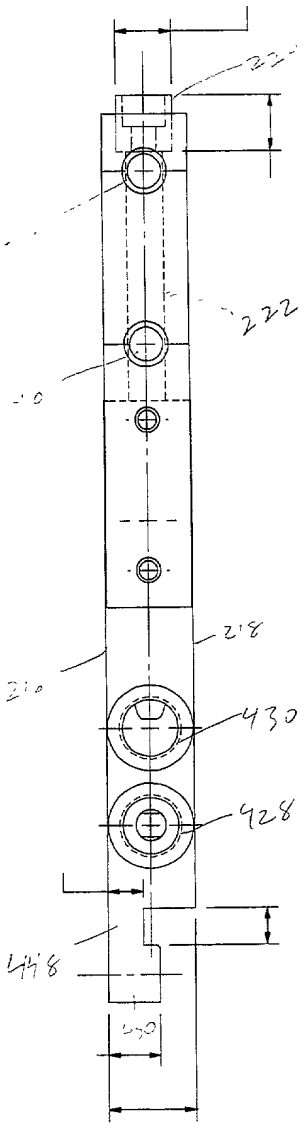
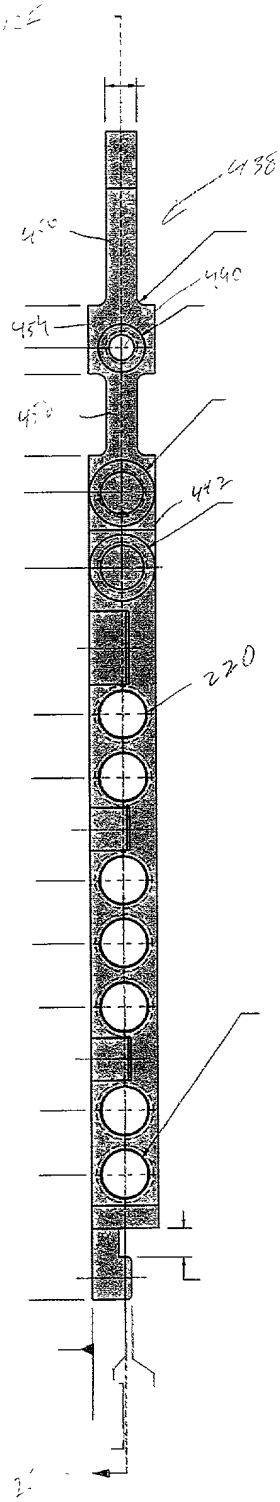


FIG. 20

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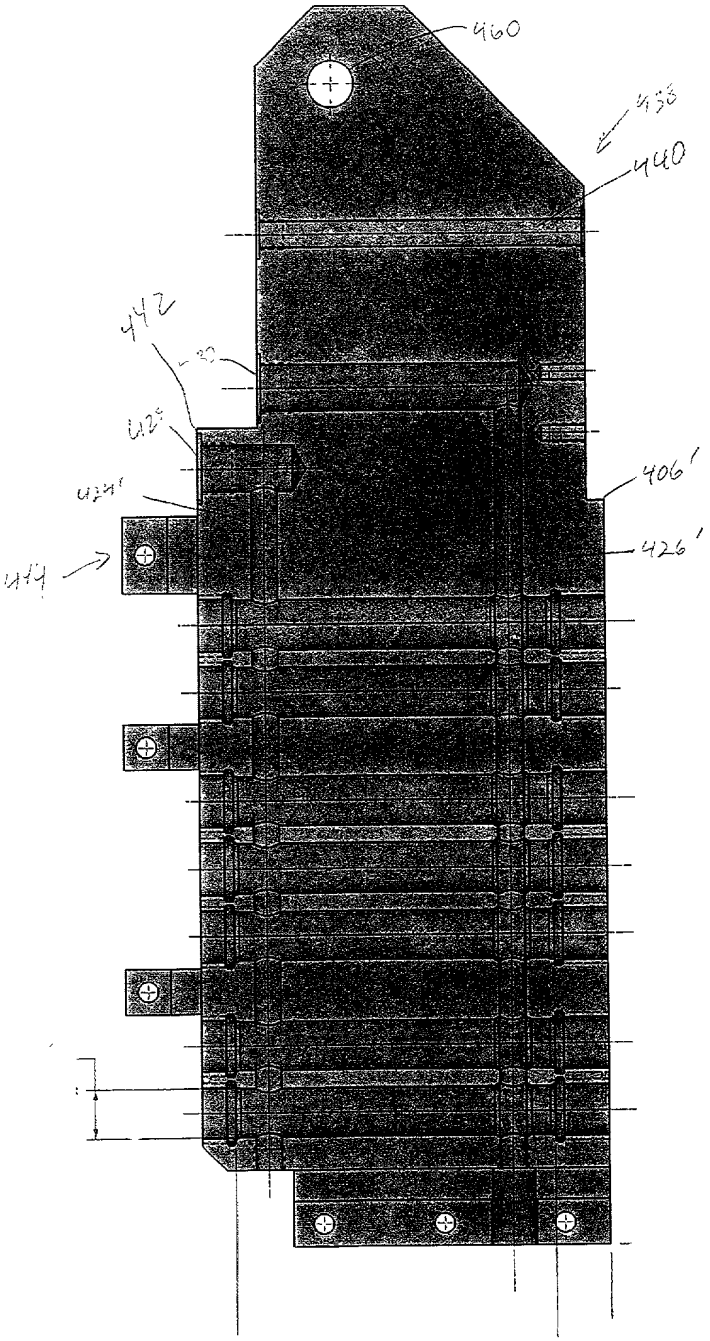
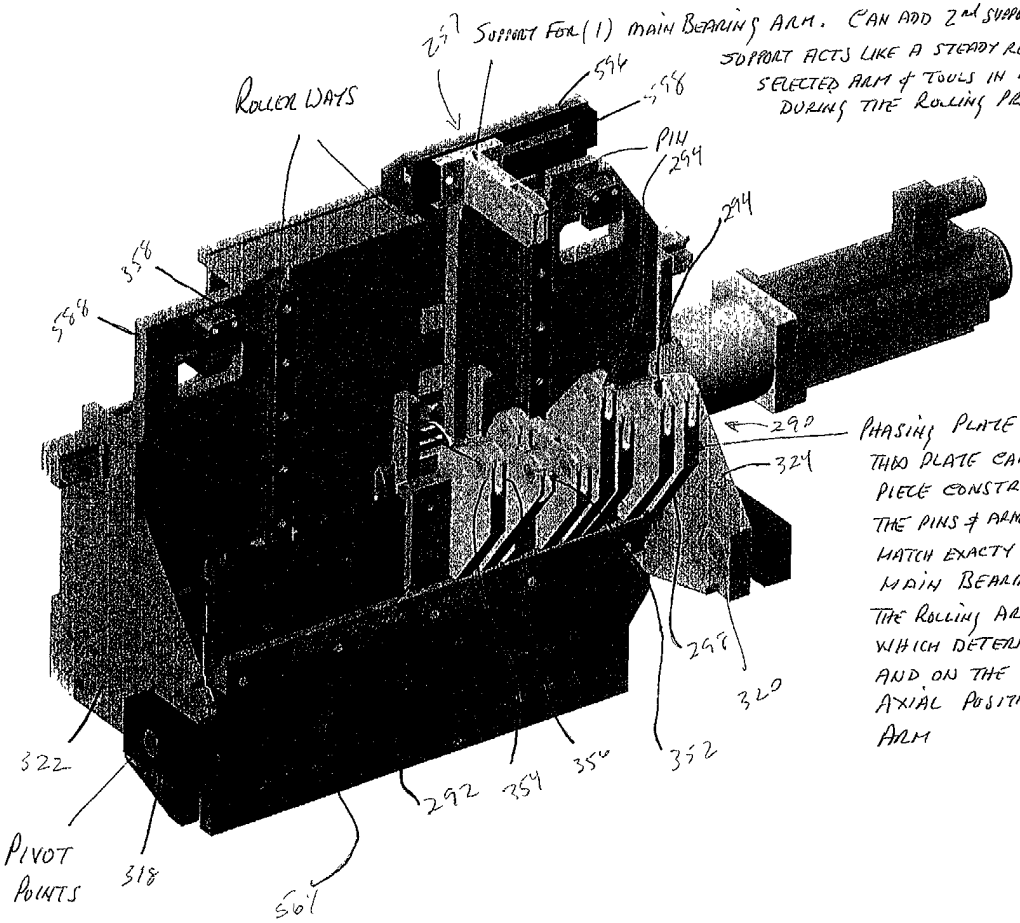

460
455
440
442
438
428
424'
444
406'
426'

ICMS. DEEP FILLET ROLLING MACHINE

ROLLING ARM LIFT MECHANISM

FIG 13A



ICMS DEEP FILLET ROLLING MACHINE

ROLLING ARM LIFT MECHANISM & ARM.

FIG 13B

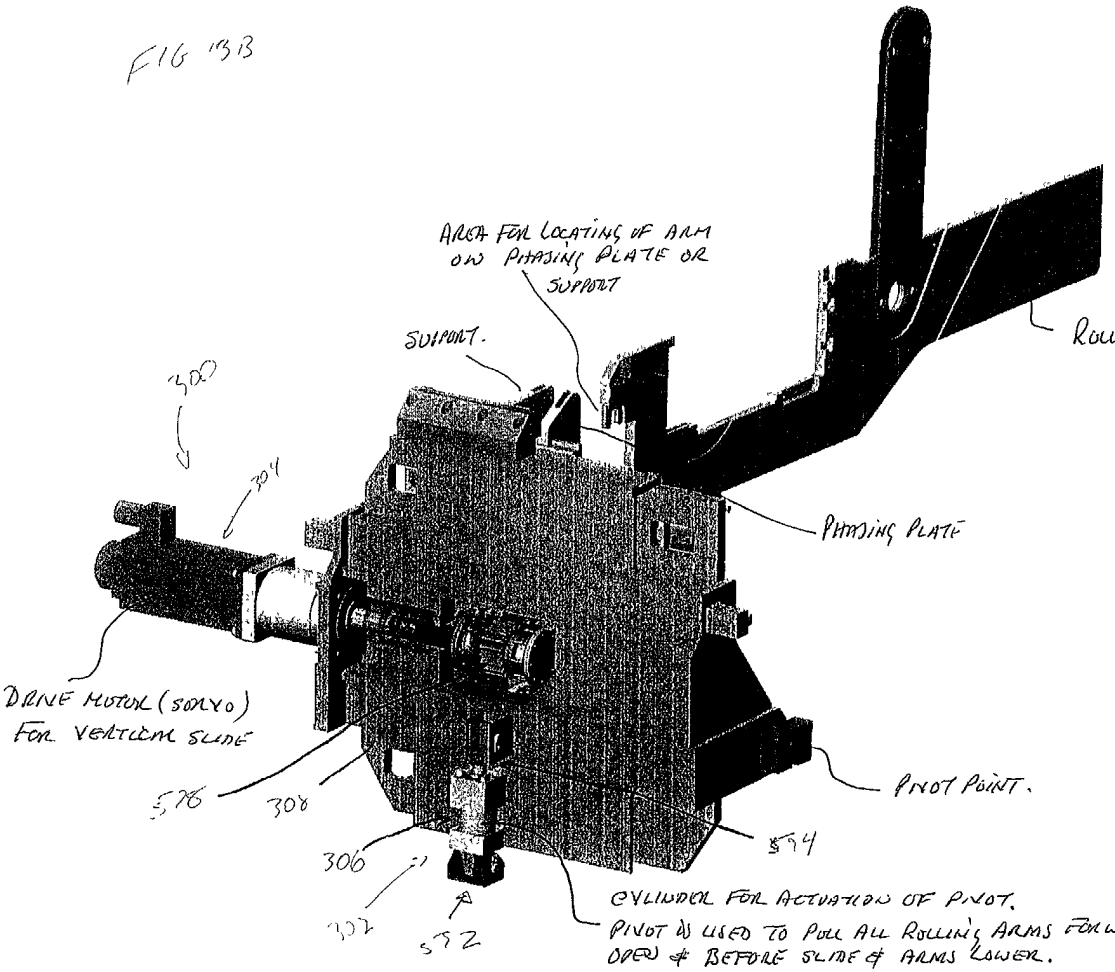


FIG 14A

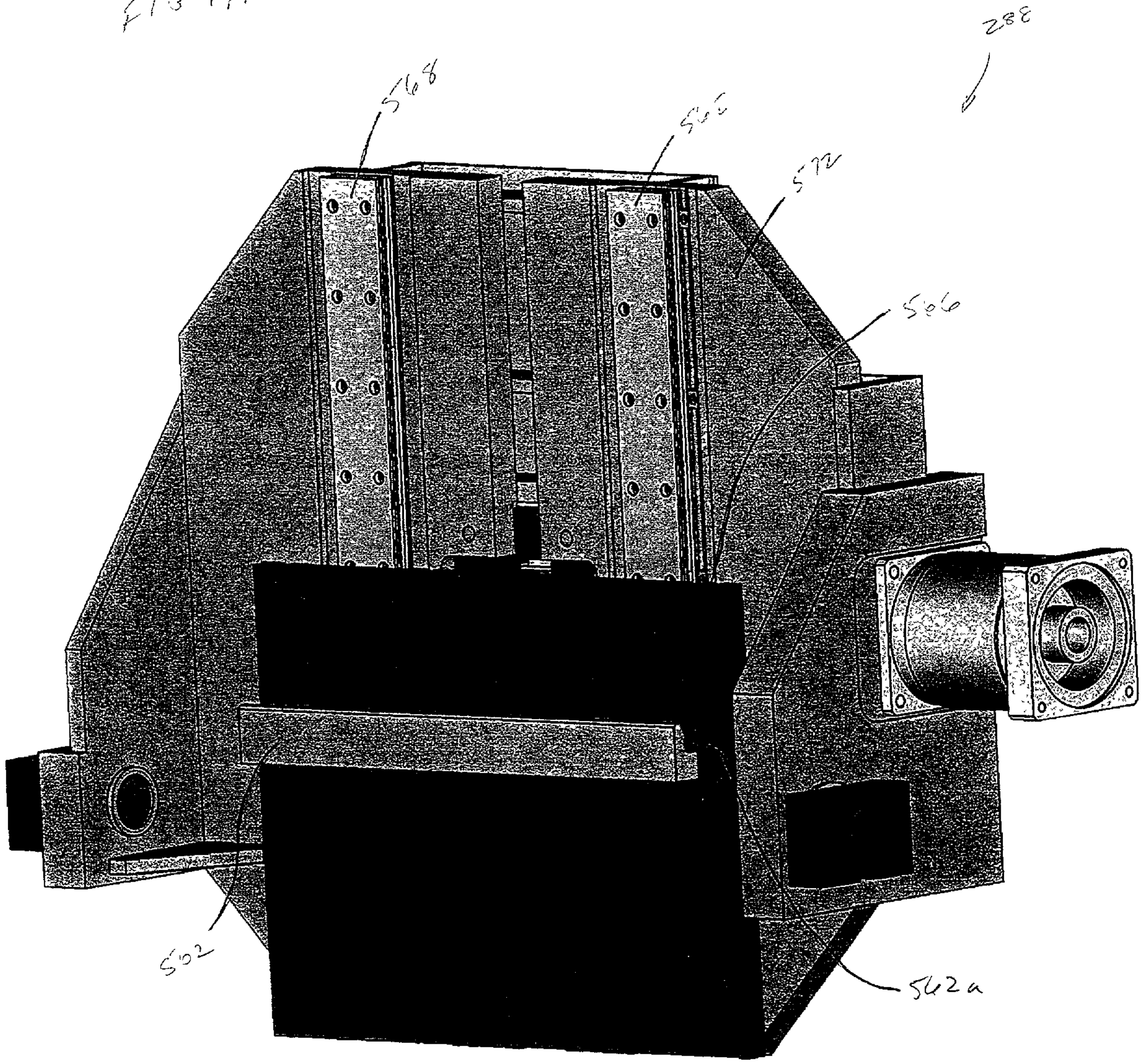


FIG 14B

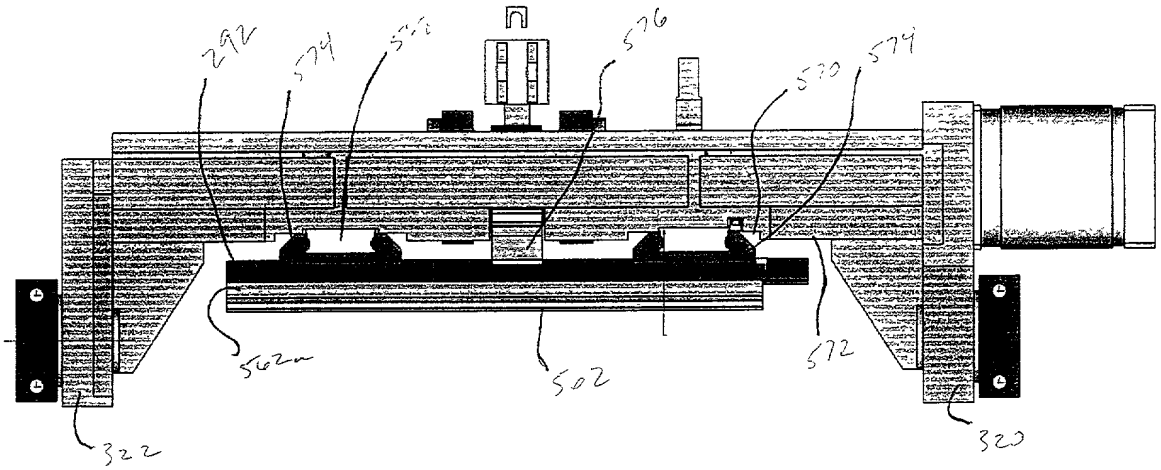


FIG 14B

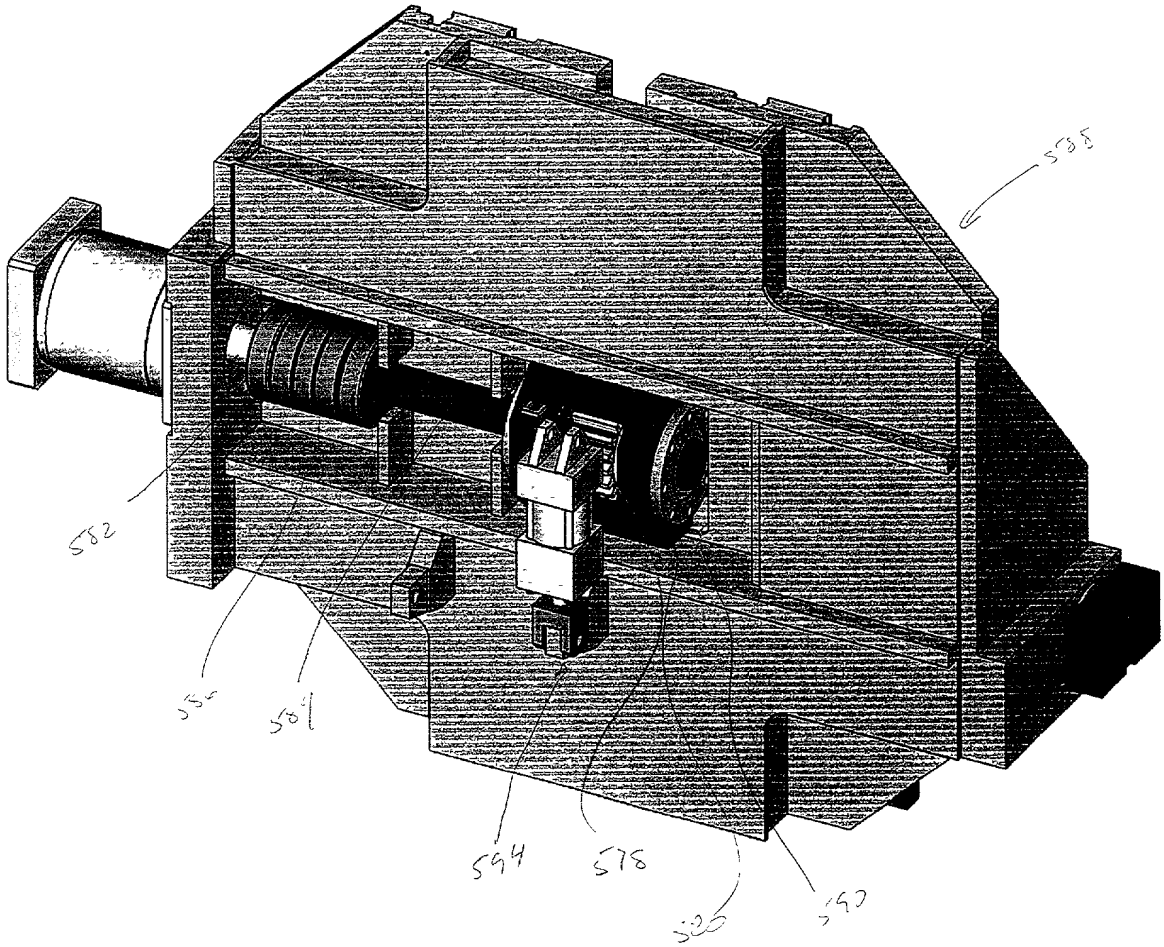


FIG. 14D

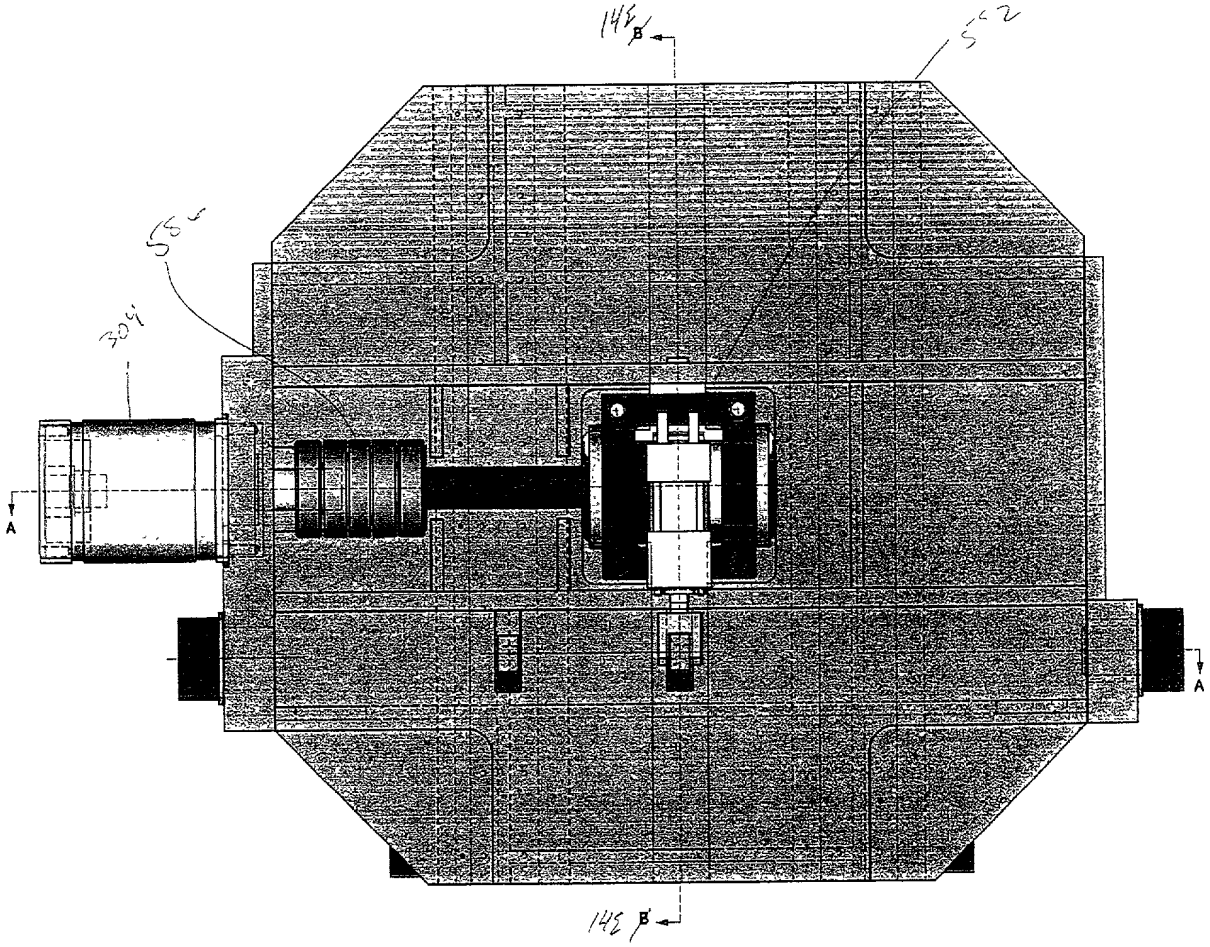
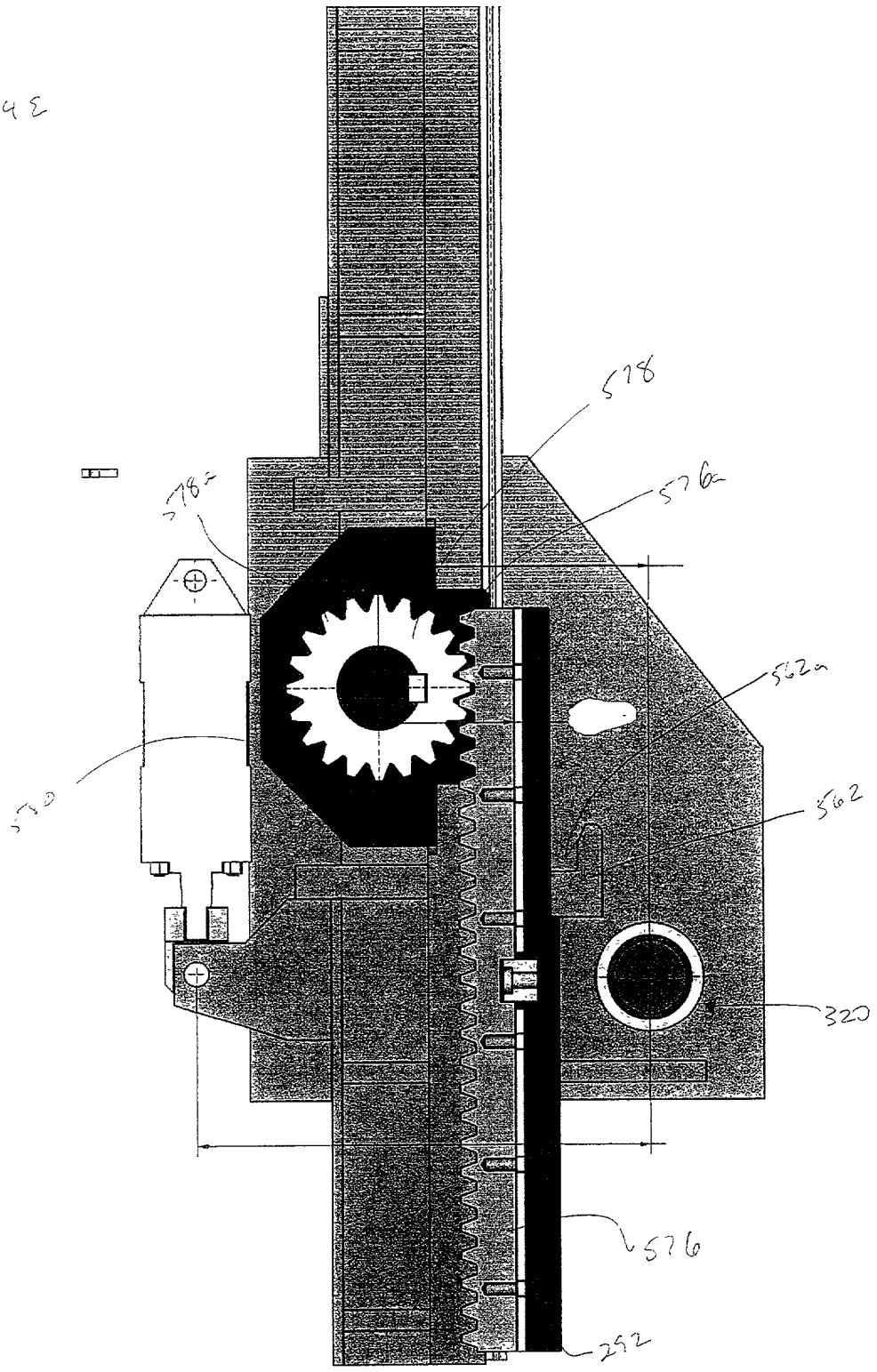


FIG 14E



SECTION B-B

FIG 15A

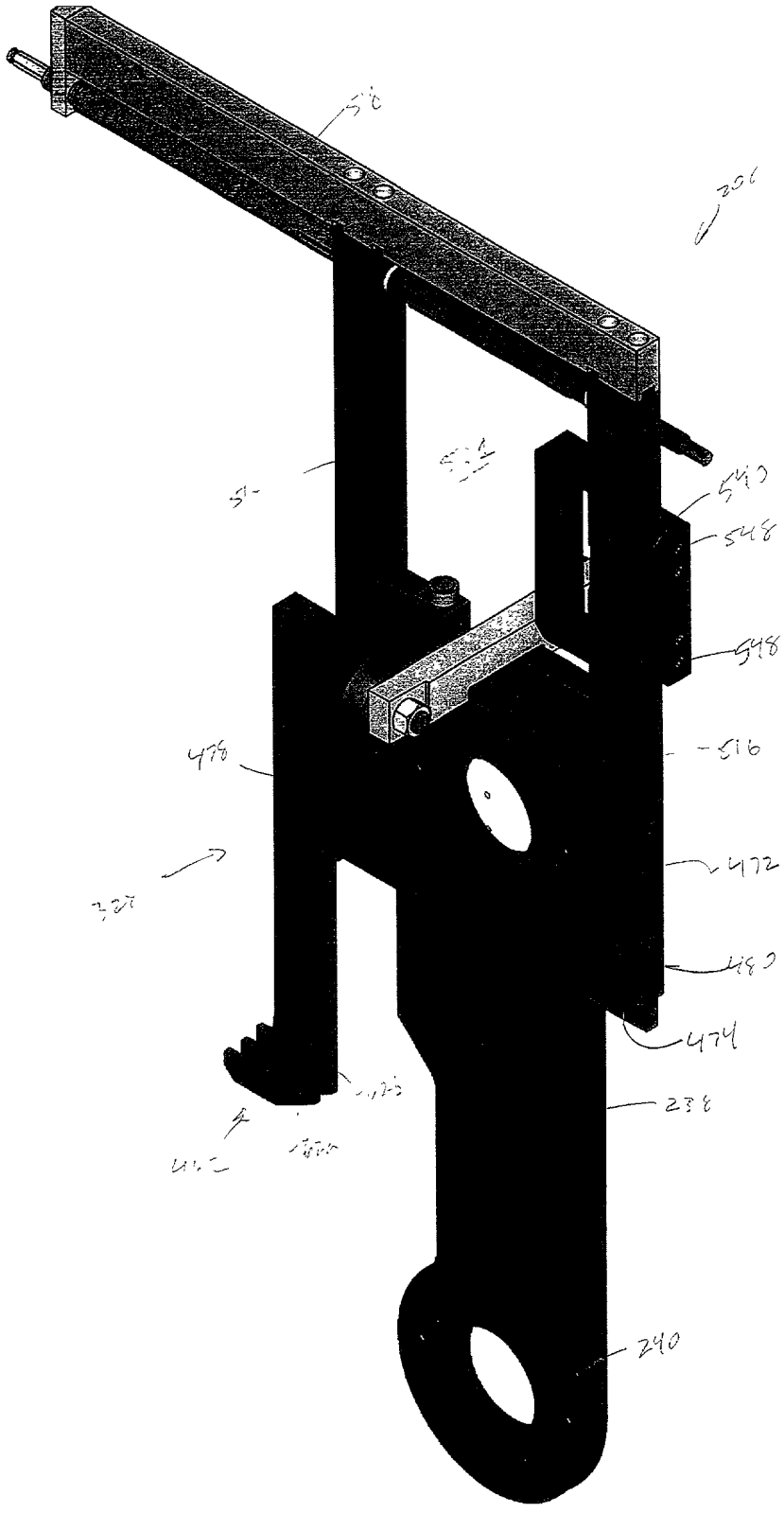
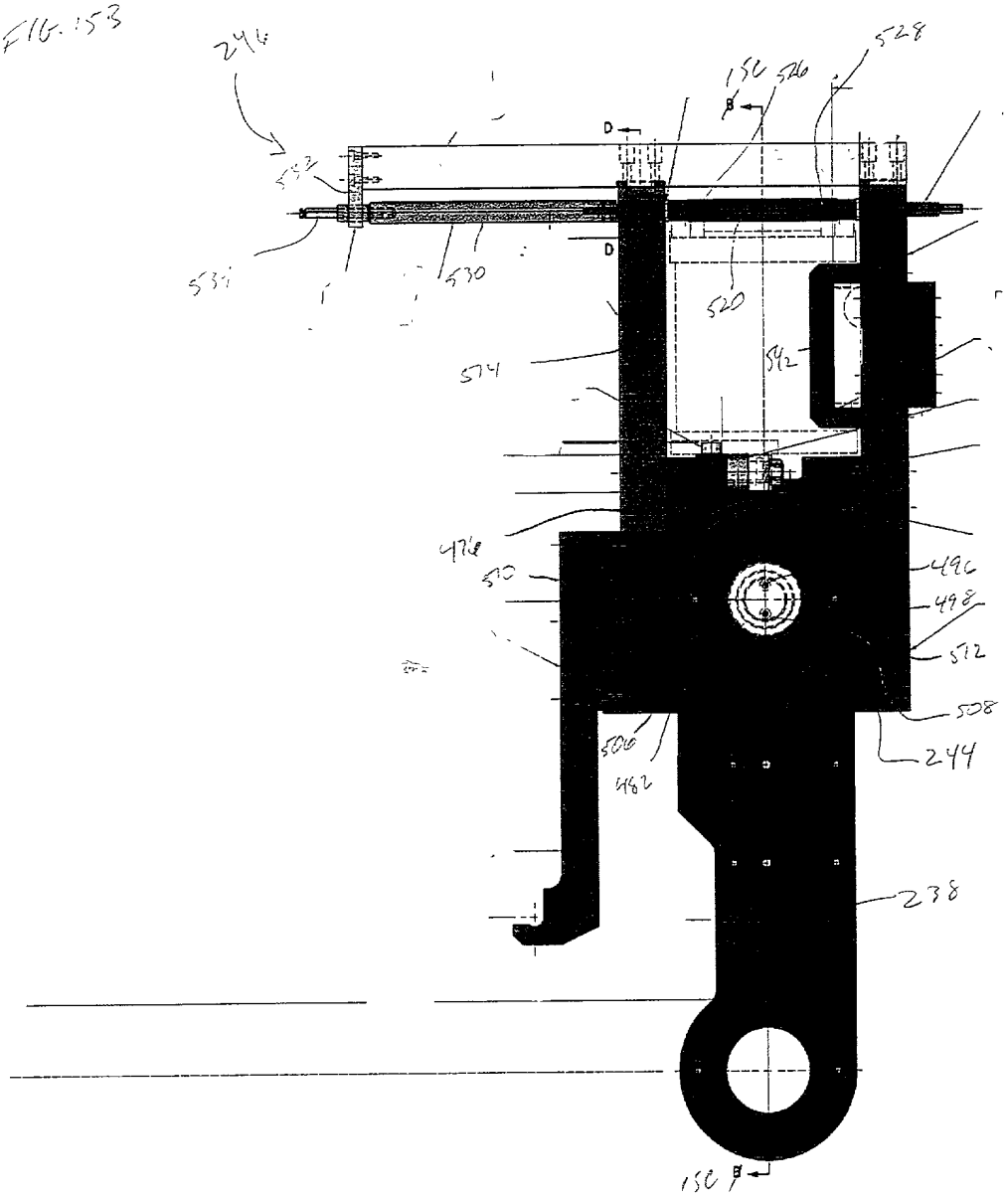


FIG. 15B


246
528
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526
B
D
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506
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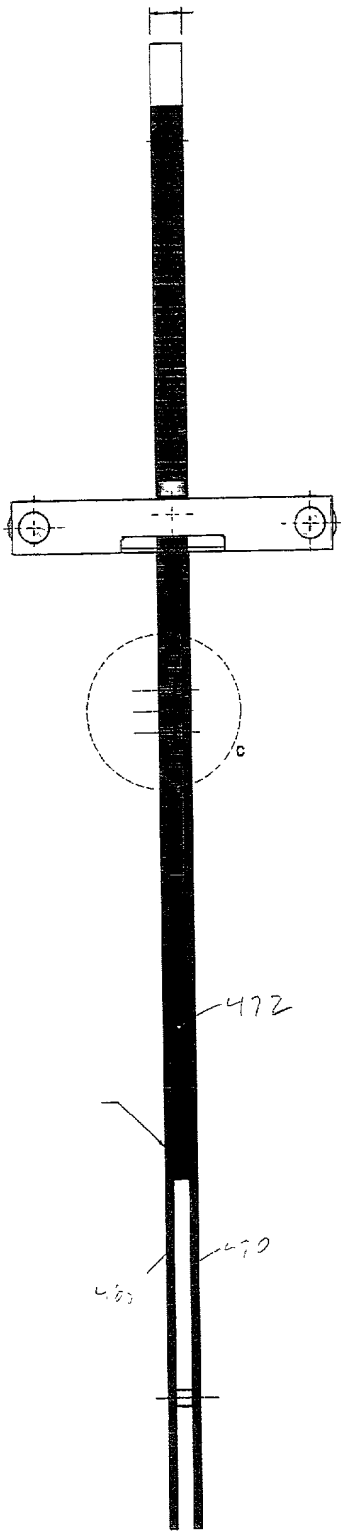
244
238
150
B

FIG. 5C



SECTION B-B

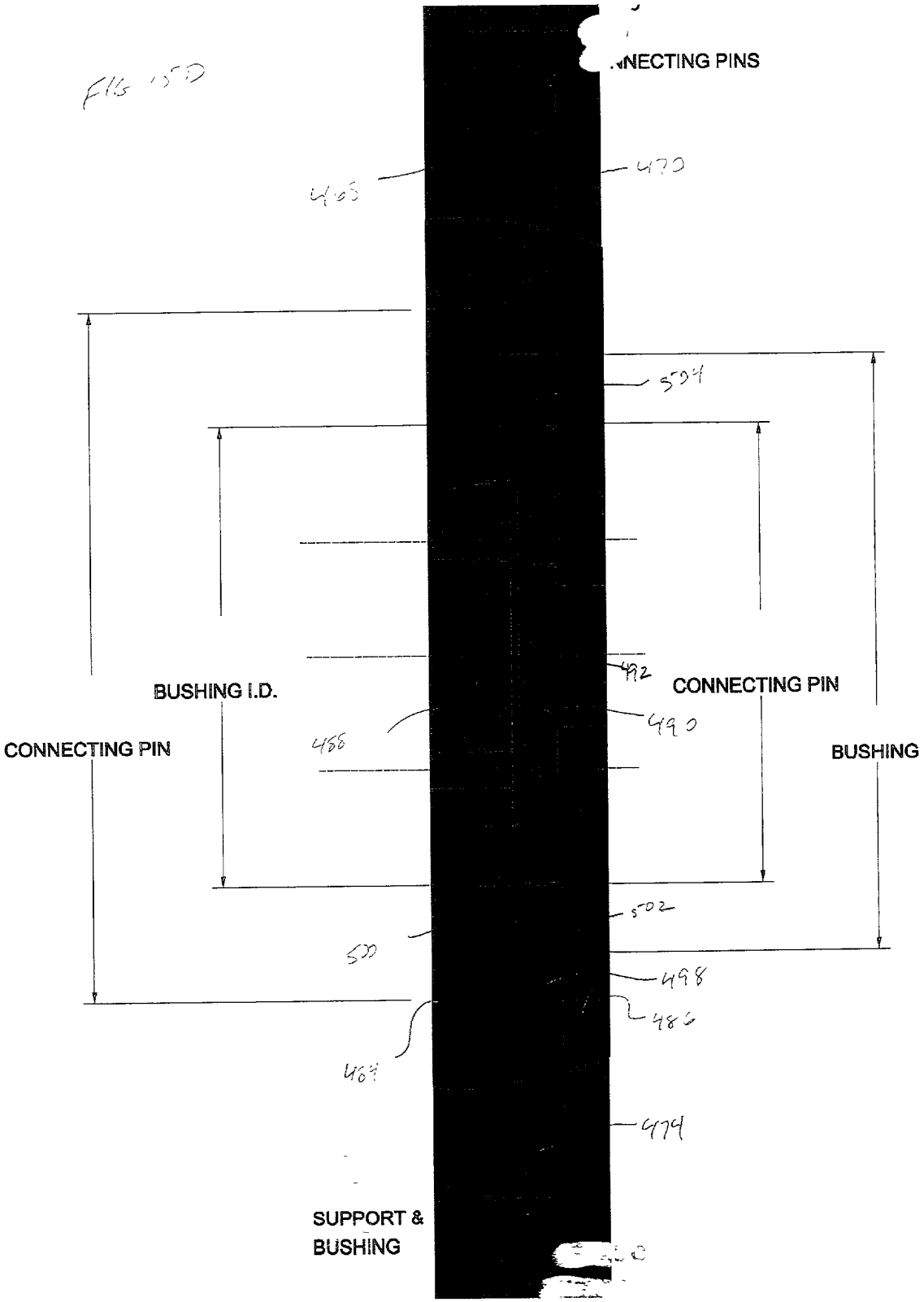
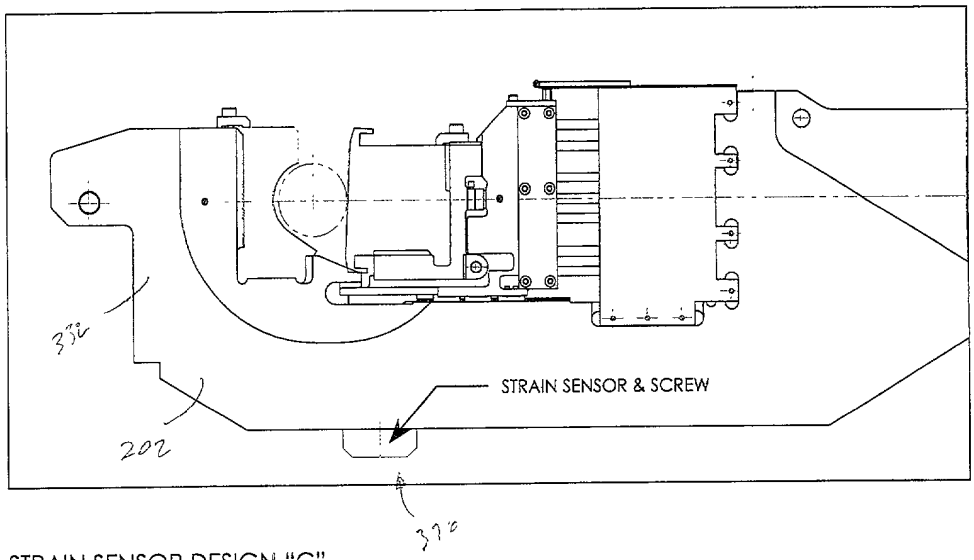


FIG 15D
NECTING PINS
470
465
504
492
CONNECTING PIN
BUSHING I.D.
490
486
CONNECTING PIN
BUSHING
502
500
498
486
484
479
SUPPORT &
BUSHING

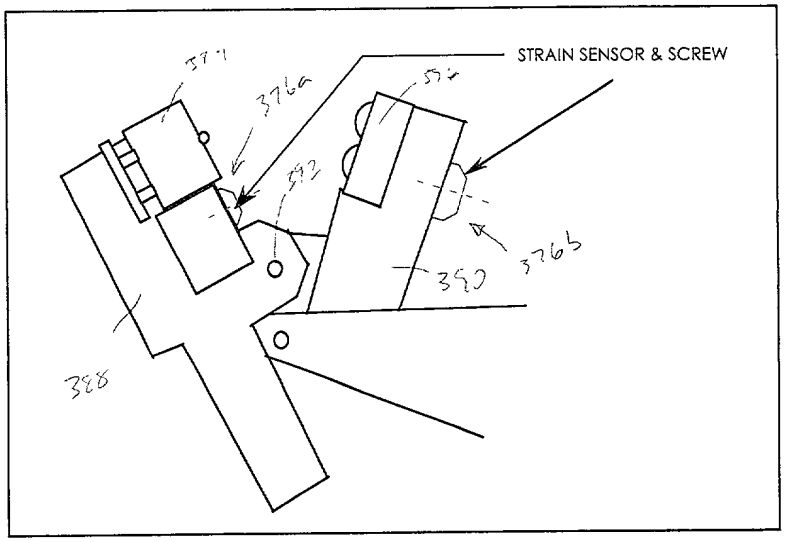
FIG 16A

STRAIN SENSOR DESIGN "B"



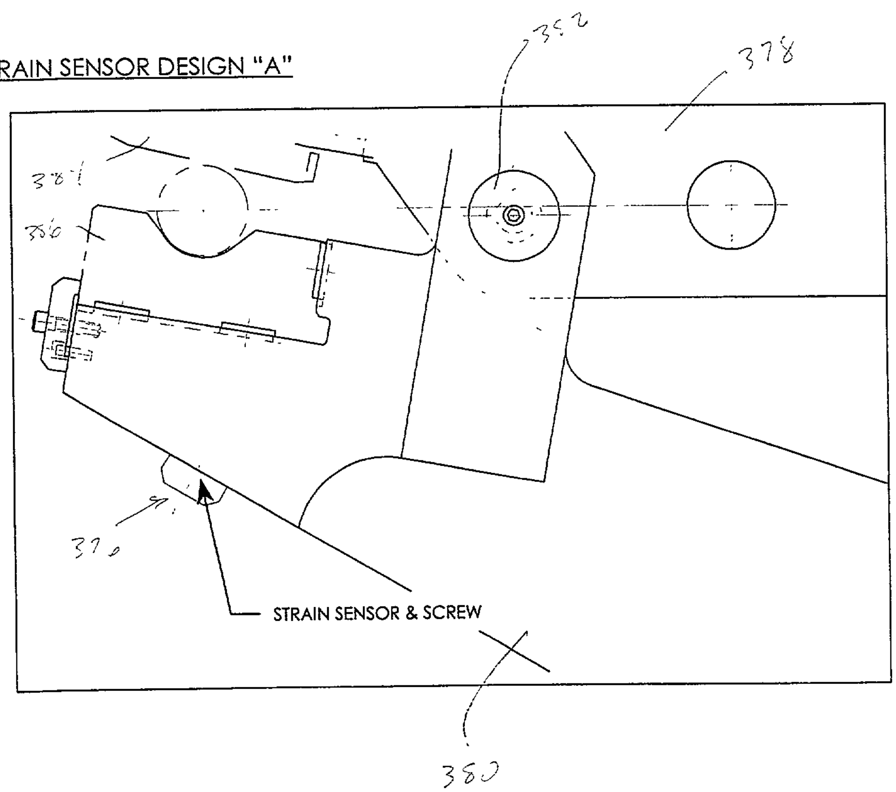
STRAIN SENSOR DESIGN "C"

FIG 16C



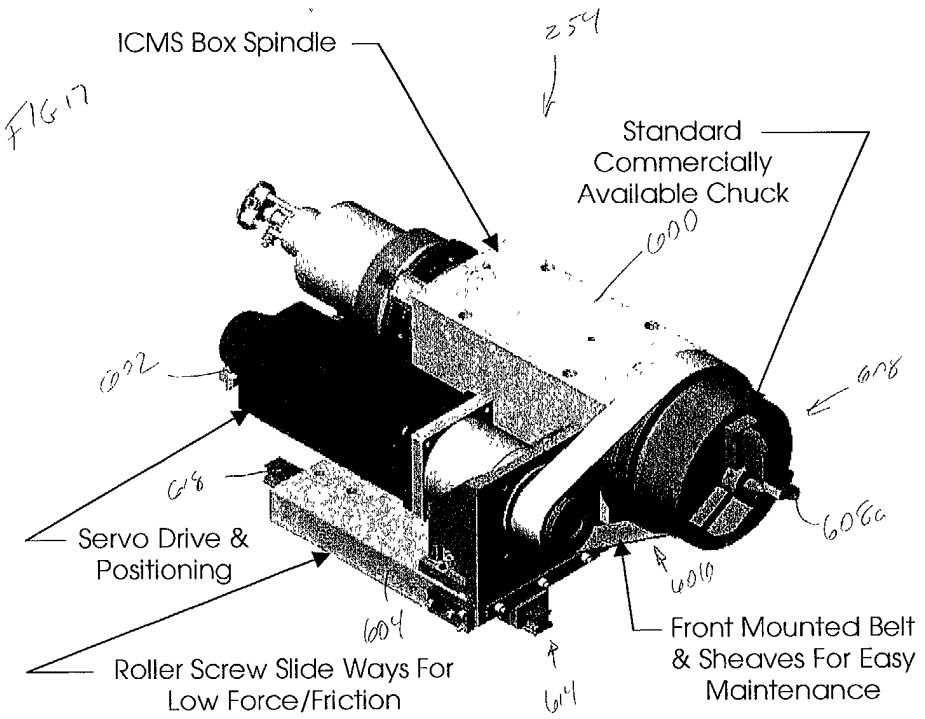
STRAIN SENSOR DESIGN "A"

FIG 16B



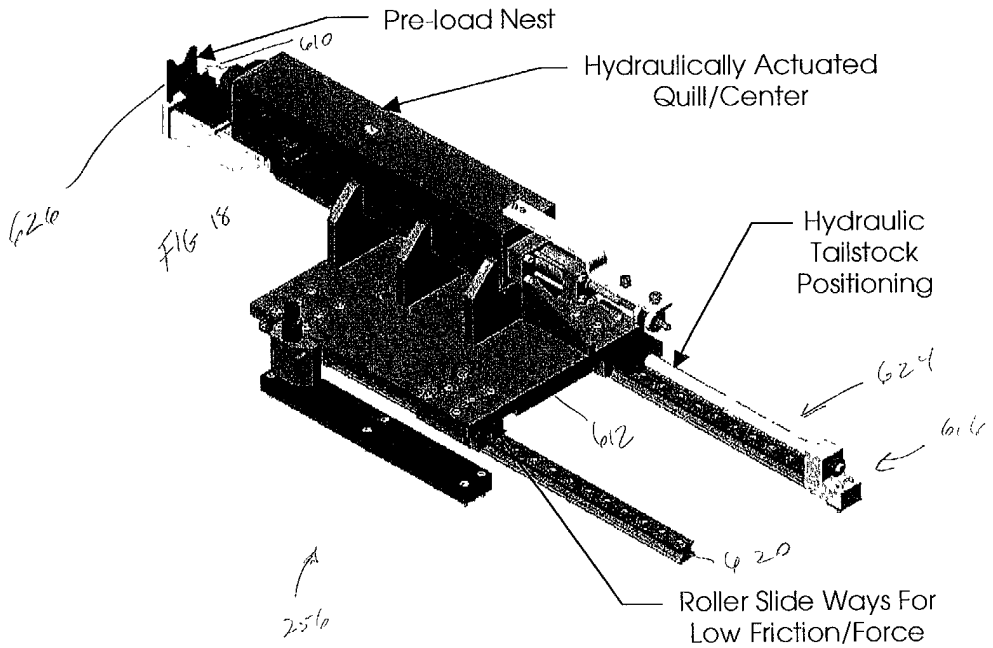
INGERSOLL CM SYSTEMS

New Machine Design.



Headstock Assembly

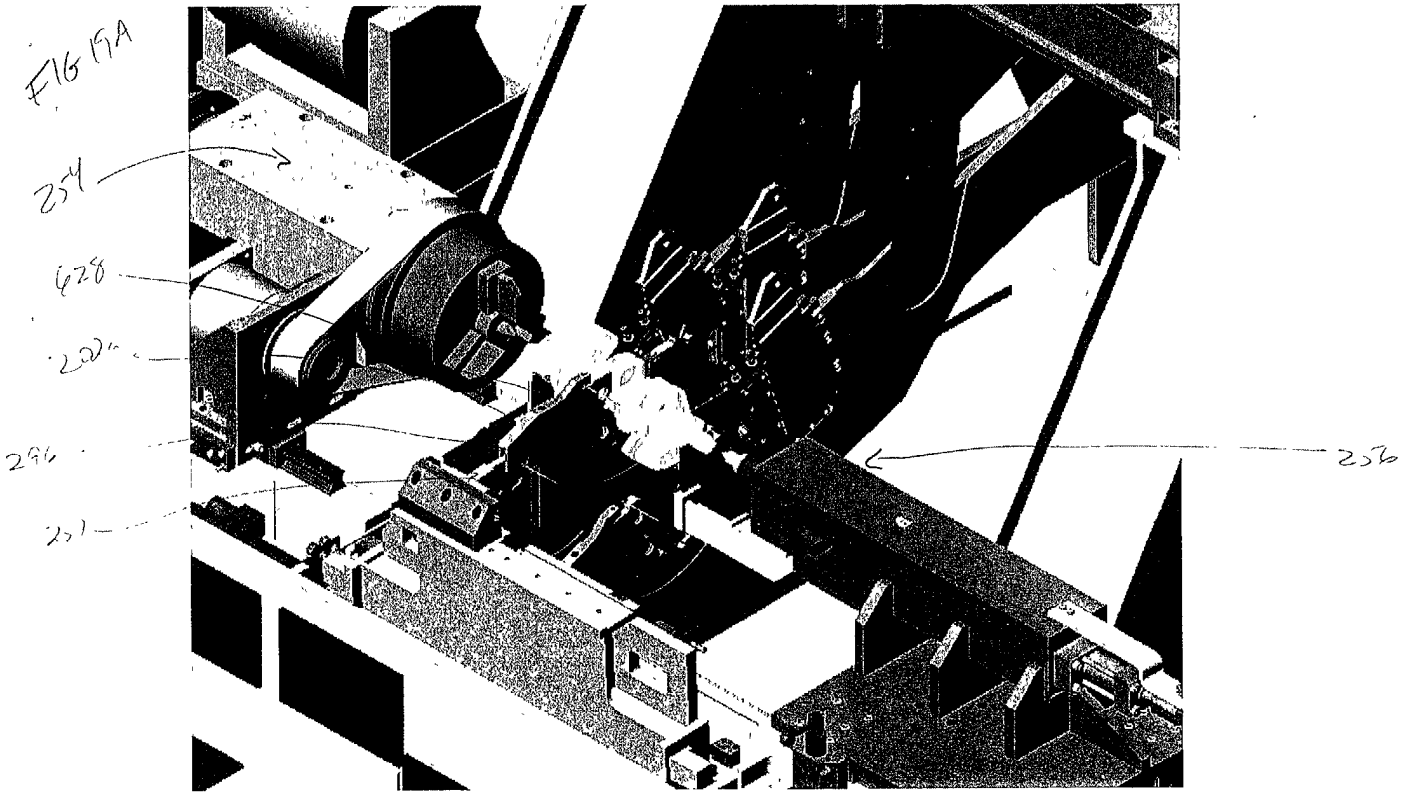
New Machine Design.



Tailstock Assembly

Machine Sequence

- **Load Part**

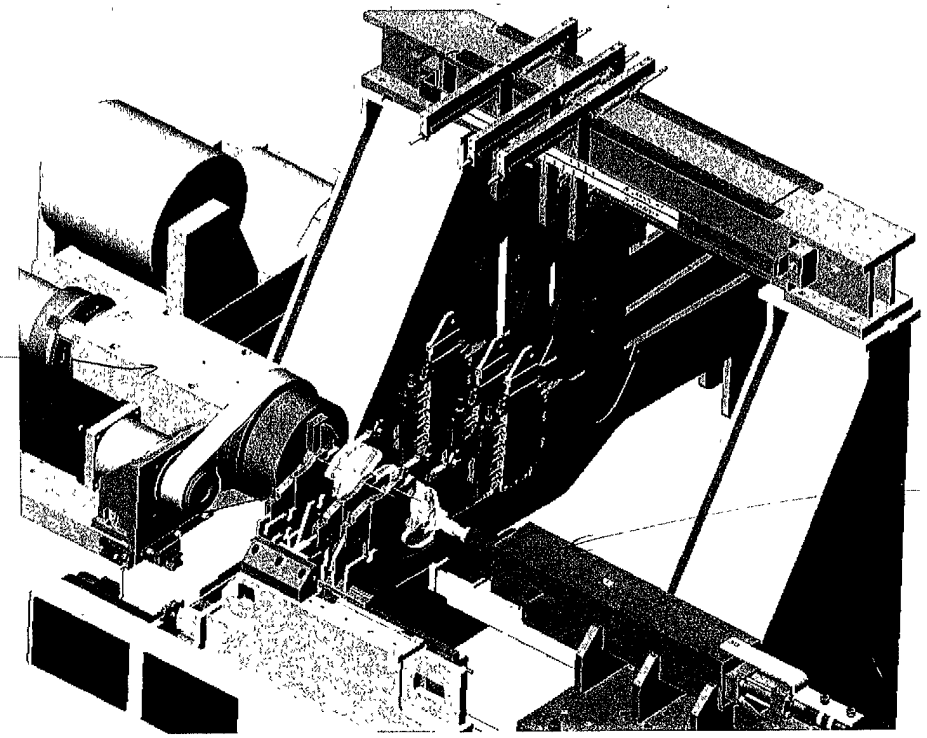


INGERSOLL CM SYSTEMS

Machine Sequence

- Advance Headstock & Tailstock
- Raise Arms
- Pivot Arms

FIG 19B

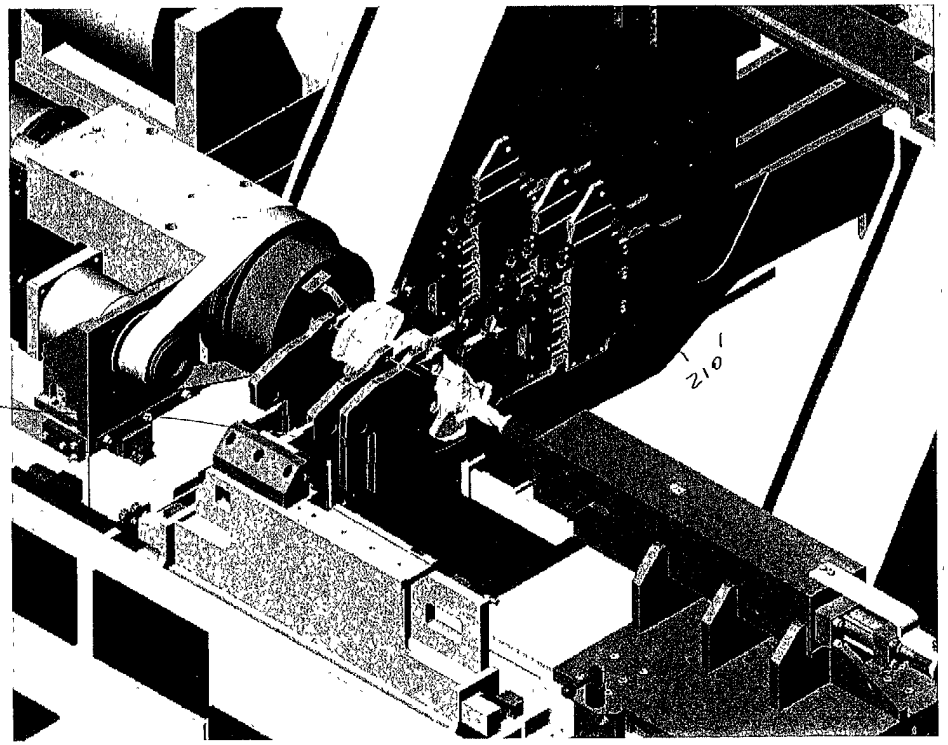


INGERSOLL CM SYSTEMS

Machine Sequence

- Close Tools & Chuck
- Lower Arm Lift Mechanism
- Roll Part

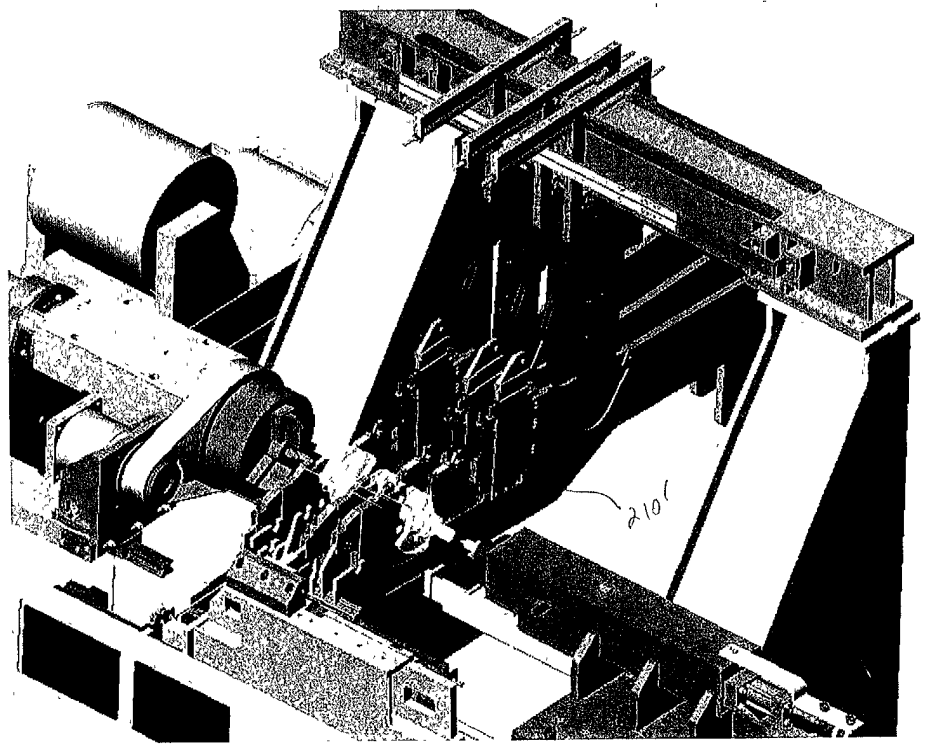
FIG 19C



Machine Sequence

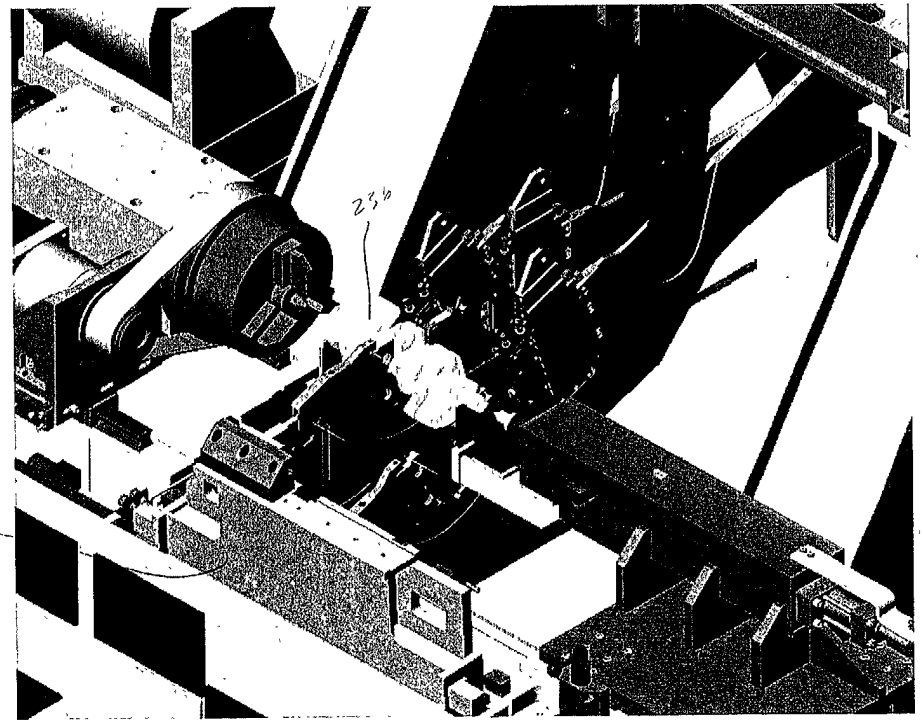
- Raise Tool Arm Mechanism & Open Tools
- Open Chuck
- Retract Headstock & Tailstock

FIG 19D



Machine Sequence

- Lower Tool Arm Lift Mechanism
- Pivot & Lower Tool Arms
- Unload Part



INGERSOLL CM SYSTEMS

Machine Setup

- **Tool Arm Adjustment Position**

FIG 19F